

UNITED STATES
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AD-A241 229



OCCUPATIONAL SURVEY REPORT

F-16 AVIONIC SYSTEMS CAREER LADDER

AFSC 452X2A/B/C

AFPT 90-452-852

APRIL 1991

91-12185



OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150-5000
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PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the F-16 Avionic Systems career ladder (AFSC 452X2A/B/C). Authority for conducting occupational surveys is contained in AFR 35-2. Computer products upon which this report is based are available for use by operations and training officials.

The survey instrument was developed by Mr Roberto B. Salinas, who also analyzed the data and wrote the final report. Computer programming and administrative support was provided by Mrs Rebecca Hernandez and Ms Tamme Lambert, respectively. This report was reviewed and approved by Lieutenant Colonel Charles D. Gorman, Chief, Airman Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Squadron (USAFOMS).

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to the USAF Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150-5000 (DSN 487-6623).

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SUMMARY OF RESULTS

1. Survey Coverage: The F-16 Avionic Systems career ladder was surveyed to obtain data for use in assessing the current classification structure for this AFS and determining whether the present training program is designed to adequately prepare F-16 Avionic Systems personnel for their first assignment. Survey results are based on responses from 1,042 respondents (56 percent of the total assigned population). All major using commands are well represented in the survey sample.
2. Specialty Jobs: Survey data portray a uniquely diverse career ladder. Six clusters and one independent job type were identified in the sample, of which 65 percent fall into one of three shred-specific jobs. Overall, four clusters were directly involved in the performance of the various technical duties and tasks of the career ladder. The remaining clusters and independent job type were oriented toward staff and support-type activities.
3. Career Ladder Progression: Personnel at the 3- and 5-skill levels in each shred spend practically all of their job time performing technical duties and tasks associated with a wide variety of avionic systems. Although 7-skill level NCOs still devote over 50 percent of their relative duty time to non-supervisory tasks across a number of different jobs, a shift toward supervisory functions is quite clear.
4. AFR 39-1 Specialty Descriptions: All descriptions accurately depict the nature of the respective technical jobs; however, they do not portray the normal progression in supervisory responsibility.
5. Training Analysis: The Specialty Training Standard (STS) and the Plans of Instruction (POI) for the FTD courses are generally supported by OSR data when measured by the normal ATC criteria. A few paragraphs of the STS, however, had low percentages of members performing. Tasks not matched to the STS and FTD POIs indicate additional areas that may deserve inclusion in any revision to the documents. The current fundamental courses at Lowry AFB are theory and knowledge based; thus, their POIs were not matched to the task performance information gathered by this survey.
6. Implications: This career ladder is uniquely diverse and specialized, with specific systems being maintained by specialized groups of individuals across the career ladder. The training documents and current courses are generally supported using the usual ATC measurement criteria; however, a comprehensive review is needed pending future consolidation efforts of Phase I and Phase II courses.

OCCUPATIONAL SURVEY REPORT
F-16 AVIONIC SYSTEMS CAREER LADDER
(AFSC 452X2A/B/C)

INTRODUCTION

This is an occupational survey report of the F-16 Avionic Systems career ladder completed by the USAF Occupational Measurement Squadron. This survey was requested by HQ ATC/TTOA, Randolph AFB TX, to obtain current task and equipment data for use in evaluating current training programs. Additionally, the survey data will also be used to assist in future consolidation efforts of the Phase II field training detachment (FTD) courses with the current Phase I fundamental courses located at Lowry AFB. A merger of the J4ABF45232A/B/C-002 courses with the G3AQR45232A/B/C-000 courses is projected to occur in the Fall of 1991. This is the first survey of this AFSC since it was restructured under the April 1987 Rivet Workforce initiative.

Background

As described in AFR 39-1 Specialty Descriptions, personnel in this career ladder analyze malfunctions, inspect, install, maintain, and troubleshoot F-16 avionic systems at the organizational level. They perform general aircraft-handling procedures. AFSC 45272 technicians perform or supervise many of these same functions.

The AFSC shred (suffix) for this career ladder denotes the avionic systems maintained by these members:

452X2A denotes Attack Control Systems
452X2B denotes Instruments and Flight Control Systems
452X2C denotes Communication, Navigation, and Penetration
Aids Systems

Entry into the career ladder currently requires an Armed Services Vocational Aptitude Battery (ASVAB) Electronic score of 67. As a Category "A" training specialty, completion of the applicable basic avionic systems course is mandatory for award of the semiskilled AFSC. Currently, this includes a 42-day electronic principles course (G3AQR45020-000) followed by the appropriate prerequisite (knowledge and theory) course located at Lowry AFB CO. Students must then attend the applicable AFSC-awarding Phase II FTD (hands-on training) course (see Figure 1).

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CURRENT TRAINING PROGRAM

Lowry TTC

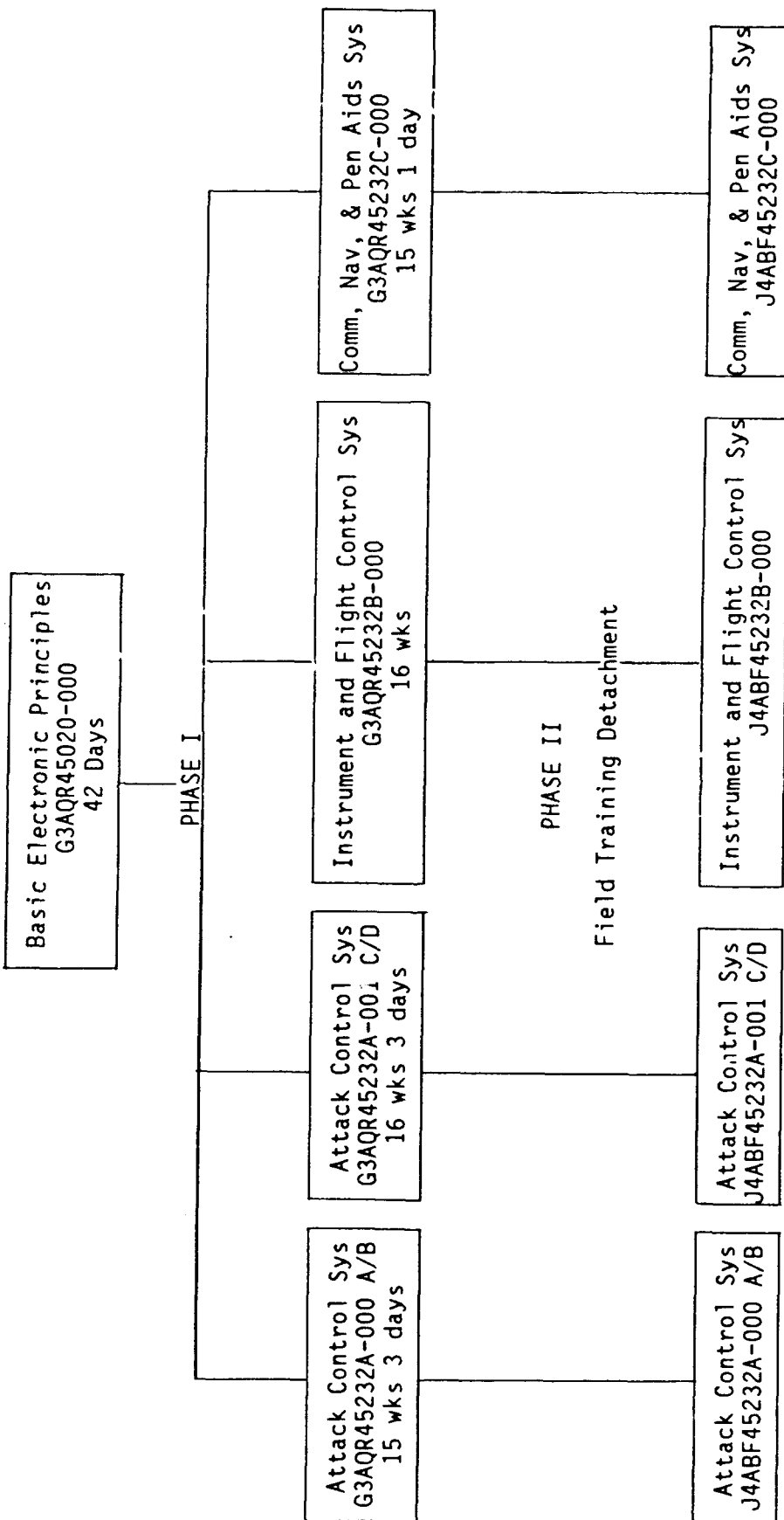


Figure 1

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-452-852, dated March 1989. A tentative task list was initially prepared using pertinent career ladder publications and directives. The preliminary task list was refined and validated through personal interviews with 54 subject-matter experts (selected to cover a variety of major commands (MAJCOM) and varying types of aircraft at the following locations:

BASE

REASON FOR VISIT

Lowry AFB CO	Location of ATC technical training courses
Hill AFB UT	Representative of F-16 A/B avionic systems
Nellis AFB NV	Representative of F-16 A/B avionic systems
Eglin AFB FL	Representative of F-16 TEST Station
Shaw AFB SC	Representative of F-16 C/D avionic systems
Luke AFB AZ	Representative of F-16 C/D avionic systems
Edwards AFB CA	LANTIRN (Low Altitude Navigation Targeting Infrared for Night Operations) Functions

The resulting job inventory contained a comprehensive listing of 685 tasks grouped under 22 duty headings and a background section requesting such information as grade, duty title, type of aircraft being supported, and equipment used or operated.

Survey Administration

From July through October 1989, Consolidated Base Personnel Offices (CBPO) at operational bases worldwide administered the inventory to job incumbents holding DAFSCs 45232A, 45232B, 45232C, 45252A, 45252B, 45252C, and 45272. Job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Armstrong Laboratory, Human Resources Directorate (AL/HRD).

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his or her current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point scale showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative

percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and paygrade groups. All eligible DAFSC 452X2A/B/C personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by MAJCOM, of assigned personnel as of March 1989. The 1,042 respondents in the final sample represent 56 percent of the total assigned AFSC 452X2A/B/C personnel. Table 2 reflects the paygrade distribution for survey respondents. As reflected in these tables, the survey sample is an excellent representation of the career ladder population.

Task Factor Administration

While most participants in the survey process completed a USAF Job Inventory, selected senior 452X2A/B/C personnel were asked to complete booklets rendering judgements on task training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the job inventories. The information gained from these task factor data is used in various analyses and is a valuable part of the training decision process.

Task Difficulty (TD). Each individual completing a TD booklet was asked to rate all of the tasks on a 9-point scale (from extremely low to extremely high) as to the relative difficulty of each task in the inventory. Difficulty is defined as the length of time required by the average incumbent to learn to do the task. Task difficulty data were independently collected from 52 primarily 7-skill level personnel stationed worldwide. Interrater reliability was determined to be adequate, which reflects a satisfactory agreement among raters. Ratings were standardized, so tasks have an average difficulty of 5.00, with a standard deviation of 1.00. The resulting data yield essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Training Emphasis (TE). Individuals completing TE booklets were asked to rate tasks on a 10-point scale (from no training required to extremely high amount of training required). Training emphasis is a rating of which tasks require structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 66 experienced 7-skill level personnel stationed worldwide. The interrater reliability for these raters was not adequate, indicating there was not a satisfactory agreement among raters as to which tasks required some form of structured training. This lack of agreement among 452X2 7-skill level personnel is, in all probability, the lingering effect due to the restructuring of the career ladder under the Rivet Workforce initiative. However, interrater agreement was achieved by dividing the raters according to which avionic

TABLE 1

MAJCOM REPRESENTATION IN SAMPLE
AFSC 452X2A/B/C

COMMAND	452X2A/B/C		452X2A		452X2B		452X2C	
	% TOTAL ASSIGNED* (N=1,858)	% TOTAL SAMPLE (N=1,042)	% "A" ASSIGNED* (N=463)	% "A" SAMPLE (N=215)	% "B" ASSIGNED* (N=483)	% "B" SAMPLE (N=240)	% "C" ASSIGNED* (N=541)	% "C" SAMPLE (N=262)
TAC	56	59	54	58	60	63	57	61
USAFE	22	19	21	19	21	18	25	18
PACAF	12	13	12	12	12	12	11	13
ATC	6	4	9	3	3	2	3	3
AFSC	3	4	3	5	3	3	2	4
AFLC	-	2	1	3	1	2	1	2

Total Assigned = 1,858

Total Surveyed = 1,545

Total in Survey Sample = 1,042

Percent of Assigned in Sample = 56%

Percent of Surveyed in Sample = 67%

- Less than 1 percent

* Assigned strength as of June 1989

NOTE: Columns may not add to 100 percent due to rounding

TABLE 2

PAYGRADE DISTRIBUTION OF SAMPLE
AFSC 452X2A/B/C

PAYGRADE	452X2A/B/C		452X2A		452X2B		452X2C	
	% TOTAL ASSIGNED* (N=1,858)	% TOTAL SAMPLE (N=1,042)	% "A" ASSIGNED* (N=463)	% "A" SAMPLE (N=215)	% "B" ASSIGNED* (N=483)	% "B" SAMPLE (N=240)	% "C" ASSIGNED* (N=541)	% "C" SAMPLE (N=262)
E-1 to E-3	28	28	35	36	32	39	37	46
E-4	22	24	25	33	31	38	27	33
E-5	30	28	37	26	34	22	33	18
E-6	14	15	3	4	3	1	3	3
E-7	6	5	-	0	0	0	-	1
E-8	-	0	-	0	0	0	0	0

- Less than 1 percent

* Assigned strength as of June 1989

NOTE: Columns may not add to 100 percent due to rounding

systems they had gained a majority of their technician experience (20 A-, 17 B-, and 18 C-shred) in. Once this action was taken, there was, indeed, adequate interrater reliability, indicating there was satisfactory agreement among raters within each group as to which tasks required some form of structured training and which did not. In this specialty, the average TE rating was 2.61 for A-shred tasks. Tasks considered high in training emphasis have ratings of 4.56 and above. The average TE rating for B-shred tasks was 2.64. B-shred tasks considered high in training emphasis have ratings of 4.66 and above. Finally, the average TE rating for C-shred tasks was 2.99. C-shred tasks considered high in training emphasis have ratings of 5.07 and above. As was discussed in the Task Difficulty (TD) section, TE rating data may also be used to rank order tasks indicating those tasks which senior NCOs in the field consider the most important for the first-term airman to know.

When used in conjunction with the primary criterion of percent members performing, TD and TE ratings can provide insight into first-term personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting AFS entry-level jobs.

SPECIALTY JOBS (Career Ladder Structure)

A USAF Occupational Analysis begins with an examination of the career ladder structure. The structure of jobs within the F-16 Avionic Systems career ladder was examined on the basis of similarity of tasks performed and the percent of time spent ratings provided by job incumbents, independent of other specialty background factors.

Each individual in the sample performs a set of tasks called a job. For the purpose of organizing individual jobs into similar units of work, an automated job clustering program is used. This hierarchical grouping program is a basic part of the Comprehensive Occupational Data Analysis Program (CODAP) system for job analysis. Each individual job description (all the tasks performed by that individual and the relative amount of time spent on those tasks) in the sample is compared to every other job description in terms of tasks performed and the relative amount of time spent on each task in the job inventory. The automated system is designed to locate the two job descriptions with the most similar tasks and percent time ratings and combine them to form a composite job description. In successive stages, new members are added to initial groups, or new groups are formed based on the similarity of tasks performed and similar time ratings in the individual job descriptions.

The basic identifying group used in the hierarchical job structuring process is the Job. When there is a substantial degree of similarity between Jobs, they are grouped together and identified as a Cluster. Specialized jobs too dissimilar to fit within a cluster are labeled Independent Jobs (IJ). The job structure information resulting from this grouping process (the various jobs within the career ladder) can be used to evaluate the accuracy of career

ladder documents (AFR 39-1 Specialty Descriptions and Specialty Training Standards) and to gain a better understanding of current utilization patterns. The above terminology will be used in the discussion of the 452X2A/B/C career ladder structure.

Responses from the 452X2A/B/C personnel in the survey sample indicate a career ladder that is uniquely diverse and specialized; and is clearly divided according to which avionic systems are being maintained. Hence, for this particular career ladder, the AFSC suffix A, B, and C does indeed denote the avionic systems 452X2 personnel respectively maintain. Tasks pertaining to general avionic maintenance functions, and general aircraft and ancillary functions were found common across the jobs identified. Structure analysis identified six clusters and one independent job type within the survey sample. Based on task similarity and relative time spent, the division of jobs performed by F-16 Avionic Systems personnel is illustrated in Figure 2, and a listing of those clusters, plus an independent job type is provided below. The stage (STG) or (GRP) number shown beside each title is a reference to computer printed information; the number of personnel in each group (N) is also shown.

- I. DEPOT JOB (STG124, N=10)
- II. A-SHOP CLUSTER (STG65, N=201)
- III. B-SHOP CLUSTER (GRP167, N=208)
- IV. C-SHOP CLUSTER (STG68, N=267)
- V. MULTISHOP FIRSTLINE SUPERVISORY CLUSTER (STG119, N=164)
- VI. DCM COMPLEX CLUSTER (STG08, N=151)
- VII. TECHNICAL TRAINING CENTER (TTC) INSTRUCTOR JOB CLUSTER (STG50, N=15)

The respondents forming these groups account for 97 percent of the survey sample. The remaining 3 percent were performing tasks or series of tasks which did not group with any of the defined jobs. Job titles given by respondents which were representative of these personnel included NCOIC Boresight and Board Coordinator.

Group Descriptions

The following paragraphs contain brief descriptions of the clusters and the lone independent job identified through the career ladder structure analysis. Selected background data for these groups are provided in Table 3. Representative tasks for all the groups are contained in Appendix A.

AFSC 452X2A/B/C SPECIALTY JOBS (N= 1,042)

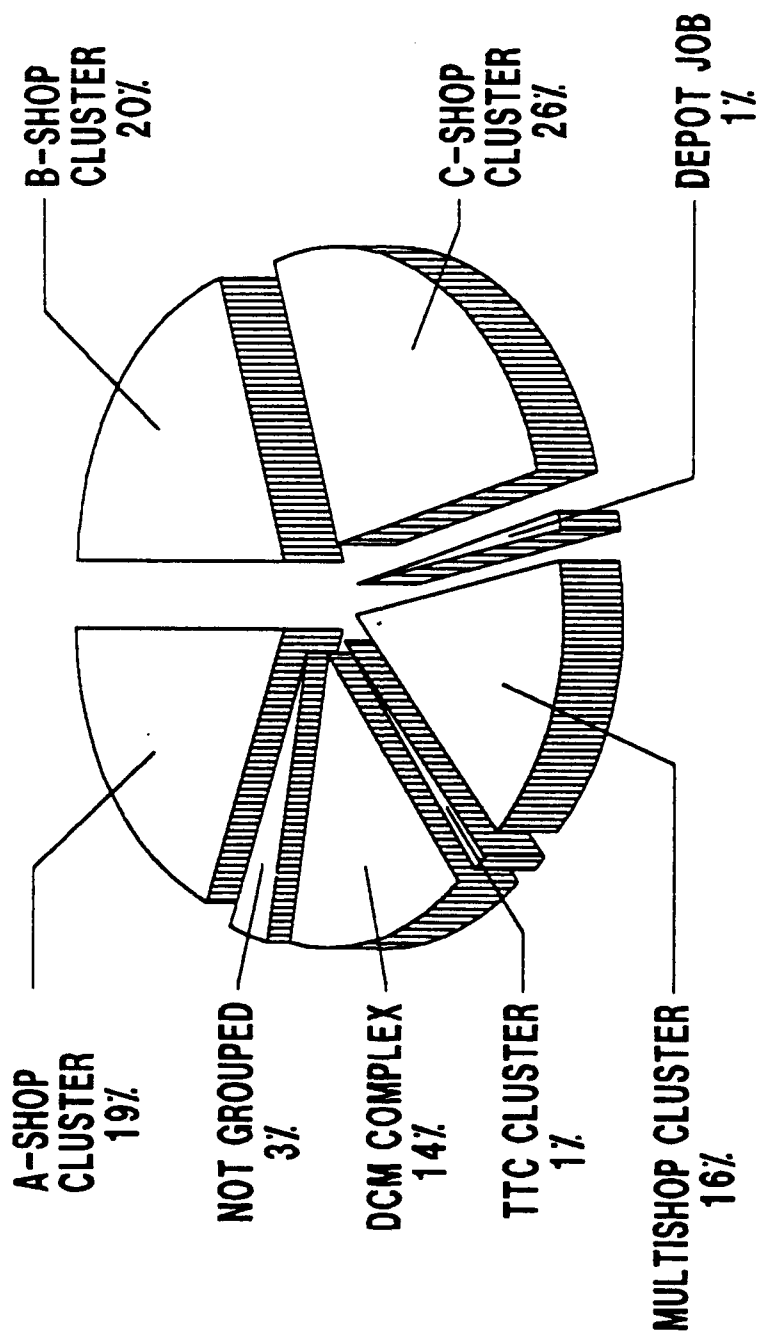


Figure 2

TABLE 3

SELECTED BACKGROUND DATA FOR SPECIALTY JOBS

	<u>DEPOT</u>	<u>A-SHOP</u>	<u>B-SHOP</u>	<u>C-SHOP</u>	<u>MULTISHOP</u>	<u>DCM</u>	<u>IIC</u>
NUMBER IN GROUP	10	201	208	267	164	151	15
PERCENT OF SAMPLE	1%	19%	20%	26%	16%	14%	1%
PERCENT IN CONUS	100%	69%	72%	67%	66%	61%	100%

DAFSC DISTRIBUTION							
45232A	0	28%	0	0	1%	0	7%
45252A	20%	56%	0	0	15%	8%	13%
45232B	0	0	35%	0	1%	1%	0
45252B	40%	0	55%	0	20%	7%	20%
45232C	0	0	0	33%	1%	1%	0
45252C	30%	0	0	50%	5%	9%	20%
45272	10%	13%	9%	17%	58%	74%	40%

PREDOMINANT GRADE(S)	E-5	E-3/4	E-3/4	E-3/4	E-5	E-6/7	E-5
AVE MONTHS IN CAREER FIELD	84	45	36	41	72	80	88
AVE MONTHS IN SERVICE	98	63	54	63	117	163	102
PERCENT IN FIRST ENLISTMENT	10%	56%	64%	57%	5%	5%	0

PERCENT SUPERVISING	50%	34%	35%	38%	85%	69%	14%
AVE NUMBER OF TASKS PERFORMED	82	119	175	180	344	39	20

* Denotes less than 1 percent

I. DEPOT JOB (STG124). This job is distinguished from other jobs in the career ladder by the performance of tasks relating to depot maintenance functions. Personnel work on F-16 avionic systems which, in most instances, come off a wrecked or burned aircraft. The 10 respondents, all located at Hill AFB and representing 1 percent of the sample, perform an average of 82 tasks. Examples of specialized tasks they perform include:

- Remove or install VHF system LRUs
- Repair aircraft wiring
- Remove or install FCR system LRUs
- Remove or install air data system LRUs
- Remove or install UHF system LRUs

This group includes primarily 5-skill level personnel from each shred (A=20 percent, B=40 percent, C=30 percent). They report a fairly high degree of experience, with an average of 2 1/2 years in their present job, 7 years in the career field, and 8 years of Total Active Federal Military Service.

II. A-SHOP CLUSTER (STG65). In this cluster, the primary job is the flightline maintenance of Attack Control Systems associated with the F-16 aircraft. The avionic systems involved are the radar system, inertial navigational system (INS), digital computer system, and head up display system. These systems are maintained by 19 percent of the sample (N=201). This group spends 84 percent of their relative job time performing an average of 119 tasks. Typical tasks performed by a majority of this group include:

- Isolate malfunctions to FCR system LRU
- Operationally check AVTR systems
- Isolate malfunctions to HUD pilot display units (PDU)
- Remove or install INS LRUs
- Load and verify canopy coefficients

Included within this group are the A-Shop Field Training Detachment (FTD) Instructors (N=5). Representative tasks include:

- Evaluate training methods, techniques, or materials
- Develop training aids
- Develop course curricula, plans of instruction (POI), or specialty training standards (STS)

Of the three shreds in the career ladder, this group is the most experienced, reporting 4 years in the career field, 3 years in their present job, and averaging over 5 years of Total Active Federal Military Service (TAFMS). Eighty-four percent indicate holding an 'A' shred designator and reflect predominant grades of E-3/E-4.

III. B-SHOP CLUSTER (GRP167). The avionic systems maintained in this cluster are the F-16 Instrument and Flight Controls. The flightline maintenance on these systems is performed by 208 members, representing 20 percent of the total survey sample. They spend 82 percent of their relative job time performing an average of 175 tasks. Some of the most representative tasks performed by this group are:

- Remove or install flight control system LRUs
- Operationally check flight control power supplies
- Operationally check flight control systems
- Operationally check AOA indicators
- Perform leak checks of pitot-static systems

In addition, this group also takes into account B-Shop FTD Instructors (N=6). Examples of tasks they perform include:

- Conduct formal classroom instruction
- Evaluate progress of students
- Prepare lesson plans

This group (predominant grades of E-3 and E-4) reflects the largest percent of personnel in their first enlistment (64 percent) and the largest percentage of 3-skill level personnel (35 percent) in the study. These moderately experienced airmen (90 percent of which hold a 'B' shred designator) average 3 years in the career field and over 2 years in their present job.

IV. C-SHOP CLUSTER (STG68). The 267 respondents in this cluster report spending 84 percent of their relative job time in the performance of tasks associated with the flightline maintenance of communication, navigation, and penetration aids and electronic countermeasures systems. Representative tasks performed by this group, who account for 26 percent of the sample, include:

- Remove or install UHF system LRUs
- Operationally check UHF systems
- Remove or install IFF system LRUs
- Set IFF mode 4 codes
- Remove or install TACAN system LRUs

Additionally, this group includes C-Shop FTD Instructors (N=4) who perform tasks such as:

- Conduct FTD training
- Evaluate progress of students
- Administer or score tests

Thirty-three percent of the respondents comprising this group are located overseas and reflect a 'C' shred designator for 83 percent of the total membership. These moderately experienced airmen (over 3 years in the career field and a little less than 3 years in their present job) average 5 years of TAFMS with predominant grades of E-3 and E-4.

V. MULTISHOP FIRSTLINE SUPERVISORY CLUSTER (STG119). Unlike the previous three clusters, whereby an airman is assigned to a shred and specializes in a specific avionic system, this job calls upon an individual to perform tasks associated with every avionic system on the F-16 aircraft. He is also responsible for the production of work and direct supervision of flightline maintenance associated with the various systems. It's no surprise, then, that these predominantly E-5 personnel perform an average of 344 tasks (164 tasks more than any other job in the study). This group spends 13 percent of their relative job time performing supervisory tasks, 28 percent maintaining instrument and flight control systems, 16 percent maintaining attack control systems, and an additional 16 percent maintaining communication, navigation, and penetration systems. Representative tasks include:

- Remove or install INS LRUs
- Remove or install HSI LRUs
- Remove or install air data system LRUs
- Remove or install standby attitude indicators
- Direct maintenance or checkout of integrated avionic systems
- Supervise Apprentice F-16 Avionic Instrument and Flight Control Systems Specialist (AFSC 45232B)
- Supervise F-16 Avionic Attack Control Systems Specialist (45252A)
- Supervise F-16 Avionic Communication, Navigation, and Penetration Specialist (AFSC 45252C)
- Plan work assignments

Thirty-four percent of the respondents comprising this group (N=164) are located overseas and represent 16 percent of the total survey sample. These highly experienced airmen (6 years in career field and 4 1/2 years in their present job) average 10 years of TAFMS.

VI. DCM COMPLEX CLUSTER (STG08). The jobs in this cluster vary in accordance to the specific assigned function and pertain to the performance of tasks relating to direct supervision of personnel, management as directors and policy makers, or miscellaneous maintenance support functions such as supply custodians, quality assurance, deficiency analyst, and pilot debriefers. The 151 respondents comprising this group (14 percent of the survey sample) perform an average of 39 tasks in the nontechnical areas just mentioned. Some of the most representative tasks performed by this group are:

- Counsel personnel
- Determine work priorities
- Write APRs
- Interpret policies, directives, or procedures for subordinates
- Supervise military personnel in AFSCs other than 452X2
- Determine requirements for personnel, space, equipment, or supplies

This job is performed by highly experienced personnel who average 6 1/2 years in the career field and almost 14 years of TAFMS. In addition, 74 percent report holding a 7-skill level DAFSC. Thirty-nine percent of the respondents reported an overseas location; with a little less than 2 years in their present job.

VII. TTC INSTRUCTOR JOB CLUSTER (STG50). This job, accounting for only 1 percent of the total sample, is comprised of 15 instructors who are responsible for the theory-based instruction of specific F-16 avionic systems provided to entry-level personnel at the Lowry Technical Training Center. Areas of responsibility include counseling, evaluation, and classroom training. Typical tasks include:

- Evaluate progress of students
- Administer or score tests
- Prepare lesson plans
- Conduct formal classroom instruction
- Develop training aids
- Write test questions

These highly experienced instructors reflect a little over 7 years in the career field and almost 1 1/2 years in their present job. The group reports an average of 8 1/2 years of TAFMS and reflect predominant grades of E-5.

Comparisons of Specialty Jobs

Six clusters and one independent job type were identified in the career ladder structure analysis. The career ladder structure indicates that members of the F-16 Avionic Systems specialty perform system-specific tasks unique to members within each shred. This was made quite evident by the clear identification of the three avionic systems clusters: Attack Control Systems; Instruments and Flight Control Systems; and Communication, Navigation, and Penetration Aids Systems. They each involve the performance of unique tasks

associated with their respective avionic systems. Another cluster involved a job which requires the knowledge and skills to perform flightline maintenance on all aforementioned avionic systems, a job performed, in this instance, by highly experienced frontline supervisory personnel. They, in essence, meet the Rivet Workforce objectives of minimizing an aircraft maintenance dependence on several system specialties. A multishop firstline supervisor integrates the maintenance abilities of personnel from all three shreds. The only independent job type identified incorporates personnel from all three shreds, who all work in a depot maintenance environment located at one particular CONUS site. The remaining clusters can be generally categorized as support and staff personnel (i.e., management, quality assurance, small computer support, etc.). Although there are a number of common tasks performed by members of the technical job clusters and independent job type, there is a clearly defined distinction among them. These differences, along with dispersion of the 452X2 sample across the support and staff-type jobs, reflect the somewhat diverse nature of the career ladder.

COMPARISON TO PREVIOUS SURVEY

The results of the survey were compared to three related Avionic Systems career ladders' occupational survey reports. Three AFSC's (326X6C, 326X7C, and 326X8C) were merged to form the current 452X2A/B/C specialty. The last occupational survey reports of AFSC 326X6A/B/C, Attack Control Systems; AFSC 326X7A/B/C, Instrument and Flight Control Systems; and AFSC 326X8A/B/C, Communication, Navigation, and Penetration Aids Systems, were completed in 1982.

With the exception of one job, the identified career ladder structure for AFSC 452X2A/B/C career ladder in the present survey was similar to that of 1982; indicating, despite major reorganization, the types of jobs which existed for F-16 Avionic Systems personnel in 1982 have remained relatively unchanged through the years. In both analyses, jobs associated with the flightline maintenance of attack control systems, instrument and flight control systems, and communication, navigation, and penetration aids systems were identified. The current study also recognized a Multishop Firstline Supervisory job which a 1982 survey referred to as Integrated Avionics Attack, Instrument, and Flight Control Maintenance Personnel. The nontechnical jobs found in the 1982 OSRs were also identified in the current study. The Depot Job, the only one not identified in the previous study, represents 1 percent of the current sample and reflects the performance of highly specialized tasks on burnt or wrecked F-16 aircraft. Comparison of current descriptions to previous survey findings is shown on Table 4.

TABLE 4

JOB SPECIALTY COMPARISONS BETWEEN CURRENT AND 1982 SURVEYS

<u>CURRENT</u>		<u>1982</u>
I. Depot Job (N=10)		I. Not Identified in Previous Survey
II. A-Shop Cluster (N=201)		II. 326X6C F-16 Technical Maintenance Personnel (N=70) 326X6C F-16 FTD Instructors (N=9)
III. B-Shop Cluster (N=208)		III. 326X7C F-16 Maintenance Personnel (N=45) 326X7C F-16 FTD Instructors (N=8)
IV. C-Shop Cluster (N=267)		IV. 326X8C F-16 Flightline Maintenance Personnel (N=67) 326X8C F-16 FTD and Tech School Instructors (N=11)
V. Multishop Supervisory Cluster (N=164)		V. 326X6A/B/C Integrated Avionics Attack Instrument and Flight Control Systems Maintenance Personnel (N=12)
VI. DCM Complex Cluster (N=151)		VI. 326X6A/B/C Debriefers (N=9) 326X6A/B/C Administrative Managers (N=6) 326X7A/B/C Administrative Personnel (N=8) 326X6A/B/C Supervision and Maintenance Personnel (N=29) 326X7A/B/C Management and Supervision (N=11) 326X8A/B/C Supervisory Personnel (N=9)
VII. TTC Instructor Job Cluster (N=15)		326X6A/B/C Due-In-For-Maintenance Monitors (N=5) 326X8A/B/C Tool Crib Personnel (N=6) 326X6A/B/C Quality Control Personnel (N=10) 326X7A/B/C Quality Control Inspectors (N=6) 326X8A/B/C Quality Assurance Inspectors (N=6) VII. 326X6A/B/C Technical School Instructors (N=10) 326X7A/B/C Technical School Instructors (N=9) 326X8A/B/C Technical School Instructors (N=11)

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS), reflect what career ladder personnel are actually doing in the field.

A comparison of the duty and task performance between DAFSCs 45232A/45232B/45232C and 45252A/45252B/45252C indicates that, while there are some minor differences, by and large, the jobs they perform within each shred are similar, as evidenced by an 80, 83, and 80 percent-time-spent overlap on tasks for A, B, and C shreds, respectively. Therefore, each will be discussed as a combined group in this report.

The distribution of skill-level groups across the career ladder jobs is displayed in Tables 5A, 5B, and 5C, while Table 6 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups. A typical pattern of progression is present, with personnel spending more of their relative time on duties involving supervisory, managerial, and training tasks (see Table 6, Duties A, B, C, and D), as they move upward to the 7-skill level. Tables 7A, 7B, and 7C display those tasks which most clearly differentiate the 3-/5-skill level and 7-skill level groups for each shred; while Tables 8A, 8B, 8C, and 9, respectively, present job descriptions for AFSC 45232/45252A, 45232/45252B, 45232/45252C, and 45272 skill levels. It is also obvious, though, that 7-skill level personnel are still involved with technical task performance, as will be pointed out in the specific skill-level group discussions below.

Skill-Level Descriptions

DAFSCs 45232/45252A/B/C. The 717 airmen in the 3- and 5-skill level group (representing 69 percent of the survey sample) performed an average of 158 tasks. Performing a highly technical job, 92 percent of their relative duty time is devoted to tasks covering a variety of functions associated with the flightline maintenance of avionic systems belonging to the F-16 aircraft. As discussed earlier, 3- and 5- skill level personnel in this group are divided into shreds based upon the particular avionic system being maintained.

DAFSCs 45232A/45252A. Personnel in this group (N=215) perform an average of 135 tasks, with 69 tasks accounting for 50 percent of their job time. Thirty-six percent of their relative job time is spent in A-shred related tasks (Attack Control Systems), 25 percent performing general avionic maintenance functions, and an added 11 percent of their relative job time is spent performing general aircraft and ancillary common tasks.

TABLE 5A

DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS
CAREER LADDER JOBS

CAREER LADDER JOBS	DAFSC 45232A/45252A (N=215)		DAFSC 45272 (N=323)	
	NUMBER	PERCENT	NUMBER	PERCENT
I. DEPOT JOB (N=10)	2	*	1	*
II. A-SHOP CLUSTER (N=201)	169	79%	26	8%
III. B-SHOP CLUSTER (N=208)	0	0	25	8%
IV. C-SHOP CLUSTER (N=267)	0	0	45	14%
V. MULTISHOP SUPERVISORY CLUSTER (N=164)	26	12%	95	29%
VI. DCM COMPLEX CLUSTER (N=151)	12	6%	112	35%
VII. TTC INSTRUCTOR JOB CLUSTER (N=15)	3	1%	6	2%
NOT GROUPED	3	1%	13	4%

* Less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding

TABLE 5B

DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS
CAREER LADDER JOBS

CAREER LADDER JOBS	DAFSC 45232B/45252B (N=240)		DAFSC 45272 (N=323)	
	NUMBER	PERCENT	NUMBER	PERCENT
I. DEPOT JOB (N=10)	4	2%	1	*
II. A-SHOP CLUSTER (N=201)	0	0	26	8%
III. B-SHOP CLUSTER (N=208)	181	75%	25	8%
IV. C-SHOP CLUSTER (N=267)	0	0	45	14%
V. MULTISHOP SUPERVISORY CLUSTER (N=164)	34	14%	95	29%
VI. DCM COMPLEX CLUSTER (N=151)	12	5%	112	35%
VII. TTC INSTRUCTOR JOB CLUSTER (N=15)	3	1%	6	2%
NOT GROUPED	6	3%	13	4%

* Less than 1 percent

TABLE 5C

DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS
CAREER LADDER JOBS

CAREER LADDER JOBS	DAFSC 45232C/45252C (N=262)		DAFSC 45272 (N=323)	
	NUMBER	PERCENT	NUMBER	PERCENT
I. DEPOT JOB (N=10)	3	1%	1	*
II. A-SHOP CLUSTER (N=201)	2	*	26	8%
III. B-SHOP CLUSTER (N=208)	0	0	25	8%
IV. C-SHOP CLUSTER (N=267)	222	85%	45	14%
V. MULTISHOP SUPERVISORY CLUSTER (N=164)	10	4%	95	29%
VI. DCM COMPLEX CLUSTER (N=151)	15	6%	112	35%
VII. TTC INSTRUCTOR JOB CLUSTER (N=15)	3	1%	6	2%
NOT GROUPED	7	3%	13	4%

* Less than 1 percent

TABLE 6

AVERAGE PERCENT TIME SPENT PERFORMING DUTIES BY DAFSC GROUPS
(RELATIVE PERCENT OF JOB TIME)

DUTIES	45232/52A (N=215)	45232/52B (N=240)	45232/52C (N=262)	45272 (N=323)
A. ORGANIZING AND PLANNING	2	2	1	7
B. DIRECTING AND IMPLEMENTING	4	3	3	13
C. INSPECTING AND EVALUATING	2	2	2	10
D. TRAINING	2	2	2	5
E. MAINTAINING FORMS, RECORDS, AND REPORTS	8	7	9	12
F. PERFORMING GENERAL AVIONIC MAINTENANCE FUNCTIONS	25	16	17	13
G. MAINTAINING RADAR SYSTEMS	17	1	1	4
H. MAINTAINING INERTIAL NAVIGATIONAL SYSTEMS (INS)	5	*	*	1
I. MAINTAINING DIGITAL COMPUTER SYSTEMS	6	*	*	2
J. MAINTAINING HEAD UP DISPLAY (HUD) SYSTEMS	11	*	*	3
K. MAINTAINING INTEGRAL FLIGHT CONTROL SYSTEMS	1	18	*	5
L. MAINTAINING AIR DATA COMPUTER SYSTEMS	*	8	*	2
M. MAINTAINING STANDBY INSTRUMENT SYSTEMS	*	2	*	*
N. MAINTAINING ENGINE INSTRUMENT SYSTEMS	*	11	*	3
O. MAINTAINING FLIGHT INSTRUMENT SYSTEMS	*	10	*	2
P. MAINTAINING COMMUNICATION SYSTEMS	1	*	15	4
Q. MAINTAINING NAVIGATIONAL SYSTEMS	1	*	18	4
R. MAINTAINING PENETRATION AIDS AND ELECTRONIC COUNTERMEASURE SYSTEMS	1	*	16	3
S. PERFORMING GENERAL AIRCRAFT AND ANCILLARY COMMON TASKS	11	13	11	6
T. MAINTAINING LANTIRN TARGETING PODS	*	*	*	*
U. MAINTAINING LANTIRN NAVIGATIONAL PODS	*	*	*	*
V. PERFORMING BLOCK 40 FUNCTIONS	*	*	*	*

* Denotes less than 1 percent

TABLE 7A

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 45232/52A AND DAFSC 45272 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	45232/52A (N=215)	45272 (N=323)	DIFFERENCE
H261 Automatically calibrate inertial navigational systems (INS)	88	41	47
G246 Operationally check antenna elevation controls	88	42	46
G240 Isolate malfunctions to FCR waveguide assemblies	86	41	45
G255 Perform FCR integration checks	86	41	45
G236 Interpret BIT results on fire control radar (FCR) systems	92	47	45
J286 Isolate malfunctions to HUD processors or electronic units	89	44	45
J285 Isolate malfunctions to HUD pilot display units (PDU)	89	45	44
G239 Isolate malfunctions to FCR system LRU	90	46	44
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C82 Write APRs	27	74	-47
B27 Counsel personnel	33	77	-44
B48 Supervise F-16 Avionic Communication, Navigation, and Penetration Specialist (AFSC 45252C)			
B49 Supervise F-16 Avionic Instruments and Flight Control Systems Specialist (AFSC 4525-3)	7	51	-44
B50 Supervise F-16 Avionic Systems Technicians (AFSC 45272)	8	50	-42
A22 Schedule leaves	6	42	-36
C58 Evaluate compliance with performance standards	5	38	-33
A16 Plan work assignments	10	42	-32
	14	45	-31

TABLE 7B

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 45232/52B AND DAFSC 45272 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	45232/52B (N=240)	45272 (N=323)	DIFFERENCE
O407 Apply range markings	83	31	52
O430 Remove or install AOA indicators	88	37	51
K327 Operationally check flight control power supplies	89	40	49
L364 Remove or install pitot-static probes	86	38	48
K309 Isolate malfunctions to flight control power supplies	87	40	47
K339 Perform flightline test set checks without hydraulics	84	37	47
N400 Remove or install FTIT indicators	80	34	46
M369 Isolate malfunctions to standby attitude indicators	78	36	42
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B27 Counsel personnel	29	77	-48
C82 Write APRs	26	74	-48
A4 Determine work priorities	26	71	-45
B36 Indoctrinate newly assigned personnel	16	58	-42
B51 Supervise military personnel in AFSCs other than 452X2	7	43	-36
B50 Supervise F-16 Avionic Systems Technicians (AFSC 45272)	5	41	-36
B39 Interpret policies, directives, or procedures for subordinates	16	51	-35
A17 Prepare duty rosters	5	38	-33

TABLE 7C

TASKS WHICH BEST DIFFERENTIATE BETWEEN
DAFSC 45232/52C AND DAFSC 45272 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS	45232/52C (N=262)	45272 (N=323)	DIFFERENCE
R528 Isolate malfunctions to RTWS system receiver controllers	86	30	56
R530 Isolate malfunctions to RTWS system signal processors	86	31	55
R522 Isolate malfunctions to radar threat warning systems (RTWS) azimuth indicators	84	31	53
R540 Program RTWS with memory loader verifier (MLV)	80	27	53
Q514 Set IFF mode 4 codes	85	33	52
Q481 Isolate malfunctions to air-to-ground IFF controls	84	34	50
P452 Isolate malfunctions to UHF antennas	86	37	49
P455 Isolate malfunctions to UHF Have-Quick (HQ) units	79	30	49
<hr/>			
C82 Write APRs	26	74	-48
B27 Counsel personnel	30	77	-47
B47 Supervise F-16 Avionic Attack Control Systems Specialists (AFSC 45252A)	8	52	-44
B36 Indoctrinate newly assigned personnel	16	58	-42
B49 Supervise F-16 Avionic Instruments and Flight Control Systems Specialists (AFSC 45252B)	8	50	-42
B39 Interpret policies, directives, or procedures for subordinates	12	51	-39
A4 Determine work priorities	32	71	-39
B50 Supervise F-16 Avionic Systems Technicians (AFSC 45272)	3	41	-38

TABLE 8A
REPRESENTATIVE TASKS PERFORMED
BY 45232/45252A PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=215)
G258 Remove or install FCR system LRUs	91
G251 Perform BIT on FCR systems	91
H264 Operationally check INS	91
I272 Operationally check FCC or EFCC systems	90
H263 Isolate malfunctions to inertial navigation LRUs	89
J296 Remove or install HUD system LRUs	88
F178 Load and verify canopy coefficients	86
I273 Perform FCC or EFCC integration checks	85
F211 Remove or install ADIs	81
F187 Operationally check ADIs	80
F160 Interpret aircraft interconnecting wiring diagrams	73
S573 Perform aircraft safe for maintenance checks	72
S606 Walk wings or tails during aircraft towing operations	70
S548 Assist personnel in aircraft towing operations	68
G252 Perform BIT on MFDs	64
G259 Remove or install MFD LRUs	64
G241 Isolate malfunctions to MFD systems	64
S565 Inventory consolidated tool kits (CTK)	59
S570 Operate powered and nonpowered aircraft support equipment	59
B40 Inventory equipment, tools, or supplies	40

TABLE 8B
REPRESENTATIVE TASKS PERFORMED
BY 45232/45252B PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=240)
K341 Remove or install flight control system LRUs	90
K328 Operationally check flight control systems	88
K301 Isolate malfunctions to flight control computers (FLCC)	87
O420 Operationally check altimeters	87
O422 Operationally check AOA indicators	87
O421 Operationally check AOA indexers	86
L357 Operationally check pitot-static probe heaters	85
K329 Operationally check rate gyro assemblies	83
L349 Isolate malfunctions to pitot-static probes	82
N403 Remove or install hydraulic pressure indicators	82
L359 Operationally check VVIs	82
L354 Operationally check air data systems	81
F228 Remove or install rate-of-turn transmitter gyros	81
O425 Operationally check Mach indicators	80
K317 Isolate malfunctions to flight control trim systems	79
O439 Remove or install weight-on-wheel switch	78
S551 Assist personnel in launching or recovering aircraft	77
F227 Remove or install instrument glare shields	77
F159 Inspect flightline support equipment (FLSE)	59
S607 Wash aircraft	57

TABLE 8C
REPRESENTATIVE TASKS PERFORMED
BY 45232/45252C PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=262)
P471 Remove or install UHF system LRUs	89
P463 Operationally check UHF systems	88
R536 Operationally check RTWS systems	87
Q506 Remove or install IFF sytem LRUs	87
R530 Isolate malfunctions to RTWS system signal processors	86
P452 Isolate malfunctions to UHF antennas	86
Q514 Set IFF mode 4 codes	85
P456 Isolate malfunctions to UHF receiver-transmitters	84
Q501 Operationally check TACAN systems	84
P469 Remove or install intercommunication system LRUs	80
P455 Isolate malfunctions to UHF Have-Quick (HQ) units	79
Q503 Perform BIT on TACAN systems	79
S592 Remove or install safety pins	76
Q473 Insert codes into computer transponders or interrogators	76
F215 Remove or install cannon-plug connectors	76
S573 Perform aircraft safe for maintenance checks	74
S551 Assist personnel in launching or recovering aircraft	73
R538 Perform EOR IFF mode 4 transponder confidence checks	73
S565 Inventory consolidated tool kits (CTK)	60

TABLE 9
REPRESENTATIVE TASKS PERFORMED
BY 45272 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=323)
B27 Counsel personnel	77
C82 Write APRs	74
A4 Determine work priorities	71
S573 Perform aircraft safe for maintenance checks	56
F174 Isolate malfunctions to avionics relay packages or relay matrixes	55
F227 Remove or install instrument glare shields	51
J289 Operationally check AVTR systems	50
F214 Remove or install avionic systems relay packages or relay matrixes	50
I275 Remove or install FCC or EFCC system LRUs	48
S565 Inventory consolidated tool kits (CTK)	48
I276 Visually inspect FCC or EFCC mounts	47
I272 Operationally check FCC or EFCC systems	47
J296 Remove or install HUD system LRUs	46
F200 Operationally check UHF/VHF switches	46
B50 Supervise F-16 Avionic Systems Technicians (AFSC 45272)	41
G252 Perform BIT on MFDs	41
J290 Operationally check HUD systems	41
A6 Develop work methods or procedures	39
G248 Operationally check MFDs	39
B52 Write correspondence	34
C53 Analyze causes of operational discrepancies	33
D103 Review training reports	15

DAFSC 45232B/45252B. The 240 airmen in this group perform an average of 182 tasks, with 98 tasks taking up 50 percent of their relative job time. Forty-nine percent of their job time is employed in the performance of B-shred related tasks (Instrument and Flight Control Systems); an additional 29 percent is spent in the combined areas of general avionics maintenance functions and general aircraft and ancillary common tasks.

DAFSCs 45232C/45252C. This group (N=262) spends 49 percent of their relative job time performing C-shred related tasks (Communication, Navigation, and Penetration Aids Systems), 10 percent on general aircraft and ancillary common tasks, plus an additional 17 percent of their job time accomplishing general avionics maintenance functions. An average of 156 tasks is performed by this group, with 87 tasks accounting for approximately 50 percent of their job time.

DAFSC 45272. Seven-skill level personnel, representing 31 percent of the survey sample, perform an average of 183 tasks. Even though 70 percent of the group report supervisory responsibilities, only 35 percent of their relative job time is spent on tasks in the usual supervisory, managerial, and training duties (see Table 6). This relatively low supervisory activity is further highlighted by the fact that only 34 percent of the 323 people forming this group are found in the DCM Complex cluster discussed earlier in the SPECIALTY JOBS section (the one job that was predominantly supervisory in nature). The balance of the group's population, as was the case with the 3- and 5-skill level group, is spread across the wide range of technical jobs identified in the SPECIALTY JOBS section (see Table 5). While the display of tasks in Table 9 clearly shows these personnel are responsible for supervision, it also reflects the range and scope of the job, in that relatively high percentages of the group are also performing such basic technical tasks as performing aircraft safe for maintenance checks and inventorying consolidated tool kits (CTK).

Summary

Distinctions between skill-level groups are evident, with personnel at the 3- and 5-skill levels spending the vast majority of their job time performing limited numbers of primarily technical tasks within their respective shreds. At the 7-skill level, although members still spend over half of their relative duty time on nonsupervisory tasks, a shift toward supervisory functions is quite clear.

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

The results of the skill level and job structure analyses were compared with the AFR 39-1 Specialty Descriptions, dated 1 February 1988, for the F-16 Avionics Systems Specialty. These descriptions are intended to give a broad overview of the duties and tasks performed in each skill level of the specialty. There are two descriptions applicable to this study. One describes the jobs of AFSCs 45212, 45232, and 45252; the second describes the jobs of AFSC 45272.

Based on survey data, the 39-1 descriptions accurately reflect the duties and tasks being performed by career ladder incumbents. However, they fail to mention the increase in supervisory responsibilities previously described in the DAFSC analysis.

TRAINING ANALYSIS

Occupational survey data are one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel in their first enlistment. Factors which may be used in evaluating training include the overall description of the job being performed by first-enlistment personnel and their overall distribution across career ladder jobs, percentages of first-job (1-24 month TAFMS) or first-enlistment (1-48 months TAFMS) members performing specific tasks or using certain equipment or materials, as well as TE and TD ratings (previously explained in the SURVEY METHODOLOGY section). Additionally, another source of information is a Training Requirements Analysis (TRA) which is being accomplished for this AFSC by the Training Development Services Branch (OMT) of USAFOMS.

To assist specifically in the evaluation of the Specialty Training Standard (STS) and the Plan of Instruction (POI), technical school personnel from Lowry Technical Training Center and the Field Training Detachment at Hill AFB matched job inventory tasks to appropriate sections and subsections of the STS and four POIs for courses J4ABF45232A 000 (F-16 A/B), J4ABF45232A 001 (F-16 C/D), J4ABF45232B 000, and J4ABF45232C 001. It was this matching upon which comparison to those documents was based. In addition, due to the unique diversity of this career ladder (A, B, and C shreds), distinct shred populations were used to compare percent member performing to the STS and POI documents. A complete computer listing displaying members performing tasks for each shred, TE and TD ratings for each task, along with the STS and POI matchings, has been forwarded to the technical school for their use in further detailed reviews of training documents. A summary of this information is presented below.

First-Enlistment Personnel

In this study, there are 414 members in their first enlistment (1-48 months TAFMS), representing over 40 percent of the total survey sample. The job performed by these personnel is highly technical in nature, covering the full range of F-16 avionics systems and accounting for approximately 95 percent of their relative duty time (see Table 10). Distribution of these personnel in the career ladder jobs is displayed in Figure 3, which clearly shows group members dispersed across a number of the larger groups identified in the SPECIALTY JOBS analysis. Tables 11A, 11B, and 11C display some of the tasks performed by the various first-enlistment groups.

TABLE 10

RELATIVE TIME SPENT ON DUTIES
BY FIRST-ENLISTMENT PERSONNEL

DUTIES	PERCENT TIME SPENT		
	452X2A 1ST ENL (N=111)	452X2B 1ST ENL (N=136)	452X2C 1ST ENL (N=164)
A. ORGANIZING AND PLANNING	*	*	*
B. DIRECTING AND IMPLEMENTING	1	4	1
C. INSPECTING AND EVALUATING	*	*	2
D. TRAINING	*	*	*
E. MAINTAINING FORMS, RECORDS, AND REPORTS	7	8	8
F. PERFORMING GENERAL AVIONIC MAINTENANCE FUNCTIONS	27	18	17
G. MAINTAINING RADAR SYSTEMS	20	*	*
H. MAINTAINING INERTIAL NAVIGATIONAL SYSTEMS (INS)	7	*	*
I. MAINTAINING DIGITAL COMPUTER SYSTEMS	8	*	*
J. MAINTAINING HEAD UP DISPLAY (HUD) SYSTEMS	13	*	*
K. MAINTAINING INTEGRAL FLIGHT CONTROL SYSTEMS	*	20	*
L. MAINTAINING AIR DATA COMPUTER SYSTEMS	*	9	*
M. MAINTAINING STANDBY INSTRUMENT SYSTEMS	*	2	*
N. MAINTAINING ENGINE INSTRUMENT SYSTEMS	*	13	*
O. MAINTAINING FLIGHT INSTRUMENT SYSTEMS	*	11	*
P. MAINTAINING COMMUNICATION SYSTEMS	*	*	17
Q. MAINTAINING NAVIGATIONAL SYSTEMS	*	*	21
R. MAINTAINING PENETRATION AIDS AND ELECTRONIC COUNTERMEASURE SYSTEMS	*	*	18
S. PERFORMING GENERAL AIRCRAFT AND ANCILLARY COMMON TASKS	13	12	12
T. MAINTAINING LANTIRN TARGETING PODS	*	*	*
U. MAINTAINING LANTIRN NAVIGATIONAL PODS	*	*	*
V. PERFORMING BLOCK 40 FUNCTIONS	*	*	*

* Less than 1 percent

NOTE: Columns may not add to 100 percent due to nonresponse and rounding

DISTRIBUTION OF FIRST-ENLISTMENT PERSONNEL ACROSS SPECIALTY JOBS (N= 415)

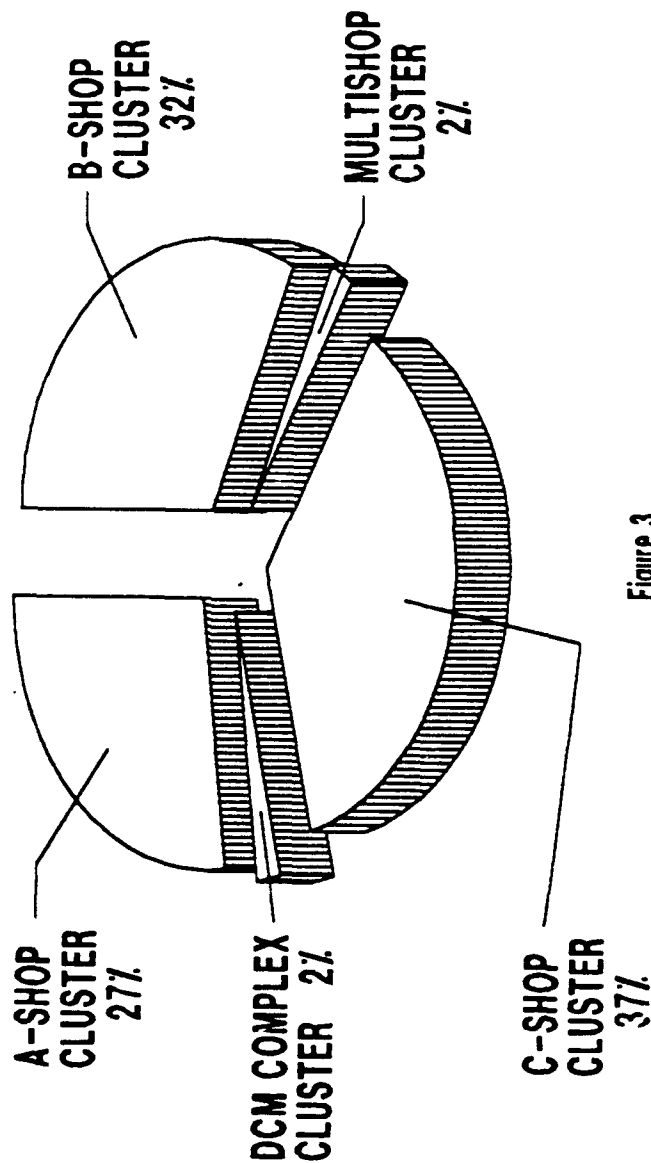


Figure 3

TABLE 11A
REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT
AFSC 452X2A PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=111)
H267 Remove or install INS LRUs	99
H264 Operationally check INS	98
J289 Operationally check AVTR systems	98
I275 Remove or install FCC or EFCC system LRUs	97
J285 Isolate malfunctions to HUD pilot display units (PDU)	97
G258 Remove or install FCR system LRUs	96
G251 Perform BIT on FCR systems	96
G255 Perform FCR integration checks	92
I273 Perform FCC or EFCC integration checks	91
J292 Perform BIT on HUD systems, other than CTVS	86
F187 Operationally check ADIs	86
J294 Perform HUD system integration checks	84
F158 Inspect aircraft wiring	84
F225 Remove or install HSI LRUs	83
S551 Assist personnel in launching or recovering aircraft	75
S548 Assist personnel in aircraft towing operations	74
S573 Perform aircraft safe for maintenance checks	73
S592 Remove or install safety pins	72
G252 Perform BIT on MFDs	67
G248 Operationally check MFDs	67
J290 Operationally check HUD systems	64
G259 Remove or install MiD LRUs	64
S585 Position or remove aircraft chocks	60
S570 Operate powered and nonpowered aircraft support equipment	57

TABLE 11B
 REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT
 AFSC 452X2B PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=136)
K341 Remove or install flight control system LRUs	96
K328 Operationally check flight control systems	93
L360 Perform leak checks of pitot-static systems	93
0422 Operationally check AOA indicators	93
0420 Operationally check altimeters	92
0421 Operationally check AOA indexers	92
K338 Perform flight line test set checks with hydraulics	91
K306 Isolate malfunctions to flight control panels	91
0428 Remove or install altimeters	91
N394 Operationally check fuel quantity indicating systems	90
L354 Remove or install pitot-static probes	90
F158 Inspect aircraft wiring	89
L362 Remove or install air data system LRUs	89
L357 Operationally check pitot-static probe heaters	89
K329 Operationally check rate gyro assemblies	89
S592 Remove or install safety pins	85
F228 Remove or install rate-of-turn transmitter gyros	85
L359 Operationally check VVIs	84
F215 Remove or install cannon-plug connectors	83
K324 Operationally check flap position switches	83
F234 Repair aircraft wiring	82
0439 Remove or install weight-on-wheel switch	79
S607 Wash aircraft	69
S560 Ground aircraft	66
F159 Inspect flight line support equipment (FLSE)	63

TABLE 11C
 REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT
 AFSC 452X2C PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=164)
P472 Remove or install VHF system LRUs	95
P471 Remove or install UHF system LRUs	95
Q506 Remove or install IFF sytem LRUs	94
P463 Operationally check UHF systems	94
R536 Operationally check RTWS systems	93
R546 Remove or install RTWS system LRUs	92
P452 Isolate malfunctions to UHF antennas	91
Q501 Operationally check TACAN systems	90
Q514 Set IFF mode 4 codes	90
Q497 Operationally check air-to-ground IFF systems	88
R533 Operate radar signal simulator test sets (squirt box)	88
Q499 Operationally check ILS systems	84
P455 Isolate malfunctions to UHF Have-Quick (HQ) units	83
Q503 Perform BIT on TACAN systems	82
P454 Isolate malfunctions to UHF control panels	82
S592 Remove or install safety pins	82
Q475 Interpret BIT results on TACAN systems	77
P470 Remove or install secure voice units	76
F217 Remove or install coaxial cables	74
R520 Isolate malfunctions to external ECM pods or pylons	73
R535 Operationally check external ECM systems	73
S585 Position or remove aircraft chocks	69
S607 Wash aircraft	63
F180 Maintain destruction facilities, such as burn cans	58

TABLE 12A

EQUIPMENT USED OR OPERATED BY
452X2A FIRST-ENLISTMENT PERSONNEL
(30 Percent or Greater)

<u>EQUIPMENT</u>	<u>PERCENT MEMBERS RESPONDING (N=111)</u>
Boresight Equipment	68
Pressurization Test Sets	50
Memory Loader Verifier (MLV)	49
Electrical Connector Aircraft Wiring Repair Tool Kit (DMG-216)	48
Data Transfer Cartridge Readers	43

TABLE 12B

EQUIPMENT USED OR OPERATED BY
452X2B FIRST-ENLISTMENT PERSONNEL
(30 Percent or Greater)

<u>EQUIPMENT</u>	<u>PERCENT MEMBERS RESPONDING (N=136)</u>
Flight Control Self-Test Testor/Word Readers (16U14521-1)	97
Fuel Quantity Capacity Test Sets (TF-20 or GTF-6)	90
DC Fuel Quantity Test Sets	82
TTU-205 C/E Pitot Static System Testers	82
Capacitance Test Sets	78
Electrical Connector Aircraft Wiring Repair Tool Kits	75
Fuel Quantity Gauging Test Boxes	54
Boresight Equipment	49

TABLE 12C
EQUIPMENT USED OR OPERATED BY
452X2C FIRST-ENLISTMENT PERSONNEL
(30 Percent or Greater)

<u>EQUIPMENT</u>	<u>PERCENT MEMBERS RESPONDING (N=164)</u>
Chaff/Flare Sets	96
Air to Ground IFF Test Sets	88
Memory Loader Verifiers (MLV)	84
Watt Meters	83
Instrument Landing System (ILS) Test Sets	82
Electrical Connector Aircraft Wiring Repair Tool Kits (DMG-216)	65
TACAN Test Sets	62
APM 427 Test Sets	54
Beacon Transponder Test Sets	45
RF Transmission Line Test Sets	34
Radar Signal Simulator Test Sets	32
Reflectometers	31

One of the objectives of this survey project was to gather data for the technical training center pertaining to equipment used or operated. Accordingly, Tables 12A, 12B, and 12C present percentages of first-term airmen in each shred responding to test or support equipment used or operated. This type of information is useful for both the technical school and MAJCOM training personnel to assist them in focusing limited training time or other resources on the most appropriate subject areas.

Training Emphasis and Task Difficulty Data

Training emphasis (TE) and task difficulty (TD) data are secondary factors that can assist technical school personnel in deciding what tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks in the job inventory considered important for first-term airman training (TE) (see Tables 13A, 13B, and 13C for the top-rated tasks for each shred), along with a measure of the difficulty of the job inventory tasks (TD) (see the highest rated tasks presented in Tables 14A, 14B, and 14C). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-term personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To assist technical school personnel, USAFOMS has developed a computer program that incorporates these secondary factors and the percentage of first-enlistment personnel performing each task into a computed value identified as an Automated Training Indicator (ATI). These ATI values correspond to training decisions listed and defined in the Training Decision Logic Table found in Attachment 1, ATCR 52-22. These values allow course personnel to quickly focus their attention on those tasks which are most likely to qualify for ABR course consideration.

Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. (For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report.)

Specialty Training Standard (STS)

A comprehensive review of STS 452X2 (C1-4), dated May 1987, compared STS items to survey data (based on the previously mentioned assistance from technical school personnel in matching job inventory tasks to STS elements). STS paragraphs containing general knowledge information, subject-matter-

TABLE 13A

452X2A TASKS RATED HIGHEST IN TRAINING EMPHASIS (TE)

TASKS	'A' TE*	452X2A PERCENT MEMBERS PERFORMING		TSK DIF**
		1ST JOB (N=56)	1ST ENL (N=111)	
F181 Operate head up display (HUD) systems for tie-in troubleshooting	6.15	95	95	4.61
F222 Remove or install electrical solderless connectors	6.10	32	42	5.93
F182 Operate integrated avionic systems for armament systems tie-in troubleshooting	6.05	41	54	5.16
F179 Load and verify line replaceable units (LRU) of memory verifier for attack control systems	5.90	50	59	5.45
F160 Interpret aircraft interconnecting wiring diagrams	5.80	68	74	6.82
G248 Operationally check MFDs	5.80	59	67	4.40
I272 Operationally check FCC or EFCC systems	5.80	95	96	4.38
G251 Perform BIT on FCR systems	5.75	96	96	4.24
G252 Perform BIT on MFDs	5.75	61	67	3.76
I273 Perform FCC or EFCC integration checks	5.75	89	91	4.95
J289 Operationally check AVTR systems	5.75	98	98	4.45
F203 Perform cockpit ingress or egress procedures	5.70	32	35	3.55
G245 Operate FCR for operational checks or troubleshooting of other systems	5.70	91	95	5.30
H264 Operationally check INS	5.70	98	98	4.45
F189 Operationally check CARAs	5.65	36	36	4.72

* 'A' TE MEAN = 2.61 SD = 1.95 (High TE = 4.56)

** TD MEAN = 5.00 SD = 1.00

TABLE 13B

452X2B TASKS RATED HIGHEST IN TRAINING EMPHASIS (TE)

TASKS	'B' TE*	452X2B PERCENT MEMBERS PERFORMING			TOT TD**
		1ST JOB (N=73)	1ST ENL (N=136)		
N375 Calibrate fuel quantity indicating systems	6.71	84	87		5.73
F234 Repair aircraft wiring	6.53	82	82		6.94
K309 Isolate malfunctions to flight control power supplies	6.47	89	91		5.85
K319 Operate automatic flightline test sets, such as word readers	6.47	88	90		5.70
K301 Isolate malfunctions to flight control computers (FLCC)	6.41	89	91		6.11
K302 Isolate malfunctions to flight control electronic component assemblies	6.41	89	91		6.04
K306 Isolate malfunctions to flight control panels	6.35	89	91		6.05
K303 Isolate malfunctions to flight control integrated servo actuators	6.29	85	87		6.55
L348 Isolate malfunctions to central air data computers (CADC)	6.29	89	90		5.58
F160 Interpret aircraft interconnecting wiring diagrams	6.24	78	80		6.82
N382 Isolate malfunctions to fuel quantity intermediate devices or control units	6.12	62	74		6.29
N383 Isolate malfunctions to fuel quantity probes	6.12	73	79		6.75
K304 Isolate malfunctions to flight control lateral or normal accelerometer assemblies	6.06	81	85		6.65
K328 Operationally check flight control systems	6.06	92	93		4.96
K310 Isolate malfunctions to flight control rate gyroscope assemblies	6.00	78	83		6.07

* 'B' TE MEAN = 2.65 SD = 2.01 (High TE = 4.66)

** TD MEAN = 5.00 SD = 1.00

TABLE 13C

452X2C TASKS RATED HIGHEST IN TRAINING EMPHASIS (TE)

TASKS	'C' TE*	452X2C PERCENT MEMBERS PERFORMING			TOT TD**
		1ST JOB (N=89)	1ST ENL (N=164)		
F234 Repair aircraft wiring	7.00	66	72		6.94
F160 Interpret aircraft interconnecting wiring diagrams	6.72	73	73		6.82
R533 Operate radar signal simulator test sets (squirt box)	6.39	91	88		4.60
P463 Operationally check UHF systems	6.28	96	94		4.02
Q501 Operationally check TACAN systems	6.22	89	90		4.30
R536 Operationally check RTWS systems	6.11	94	93		4.50
Q495 Operate ILS test sets	6.06	79	84		4.10
R535 Operationally check external ECM systems	6.06	74	73		4.62
P464 Operationally check VHF systems	6.00	91	91		3.96
Q494 Operate IFF transponder test sets	6.00	90	90		4.28
F200 Operationally check UHF/VHF switches	5.94	93	92		3.87
F215 Remove or install cannon-plug connectors	5.94	81	77		5.14
F222 Remove or install electrical solderless connectors	5.94	58	60		5.93
Q497 Operationally check air-to-ground IFF systems	5.94	89	88		4.38
Q499 Operationally check ILS systems	5.94	79	84		4.17

* 'C' TE MEAN = 2.99 SD = 2.08 (High TE = 5.07)

** TD MEAN = 5.00 SD = 1.00

TABLE 14A

452X2A TECHNICAL TASKS RATED HIGHEST
IN TASK DIFFICULTY (TD)

TASKS	TOT ID	452X2A PERCENT MEMBERS PERFORMING		
		1EL (N=111)	5LV (N=154)	45272 (N=323)
J277 Boresight head up display (HUD) systems	7.78	77	64	28
H262 Boresight inertial navigational unit (INU) mounts	7.30	77	63	27
F175 Isolate malfunctions to defective interconnecting wiring	7.20	61	69	52
F174 Isolate malfunctions to avionics relay packages or relay matrixes				
F234 Repair aircraft wiring	7.11	76	77	55
F160 Interpret aircraft interconnecting wiring diagrams	6.94	61	68	54
F229 Remove or install throttle grip assemblies	6.82	74	75	60
I268 Isolate malfunctions to FCC or EFCC multiplex busses (MUXBUS)	6.62	87	79	41
G240 Isolate malfunctions to FCR waveguide assemblies	6.39	84	77	43
G254 Perform confidence checks on FCR antenna mounting pins	6.13	94	84	41
F221 Remove or install electrical connectors by soldering	6.10	63	58	25
F212 Remove or install asymmetry brakes	6.06	34	42	39
	6.04	5	14	26

TD MEAN = 5.00 SD = 1.00

TABLE 14B

452X2B TECHNICAL TASKS RATED HIGHEST
IN TASK DIFFICULTY (TD)

TASKS	TOT TD	452X2B PERCENT MEMBERS PERFORMING		
		1EL (N=136)	5LV (N=167)	45272 (N=323)
K299 Boresight angle-of-attack (AOA) transmitters	7.85	75	74	30
F175 Isolate malfunctions to defective interconnecting wiring	7.20	66	69	52
F174 Isolate malfunctions to avionics relay packages or relay matrixes	7.11	82	80	55
F230 Remove or install throttle quadrant switches	7.07	2	8	16
F234 Repair aircraft wiring	6.94	82	80	54
F160 Interpret aircraft interconnecting wiring diagrams	6.82	80	74	60
O439 Remove or install weight-on-wheel switch	6.81	79	78	33
K311 Isolate malfunctions to flight control side-slip differential pressure sensors	6.80	69	72	33
N383 Isolate malfunctions to fuel quantity probes	6.75	79	80	37
K308 Isolate malfunctions to flight control pneumatic sensor assembly manifolds	6.69	71	75	34
K304 Isolate malfunctions to flight control lateral or normal accelerometer assemblies	6.65	85	81	39
F229 Remove or install throttle grip assemblies	6.62	10	25	41
K307 Isolate malfunctions to flight control pneumatic sensor assemblies	6.60	82	79	37
K303 Isolate malfunctions to flight control integrated servo actuators	6.55	87	83	40

TD MEAN = 5.00 SD = 1.00

TABLE 14C

452X2C TECHNICAL TASKS RATED HIGHEST
IN TASK DIFFICULTY (TD)

TASKS	TOT ID	452X2C PERCENT MEMBERS PERFORMING		
		1EL (N=164)	5LV (N=168)	45272 (N=323)
F175 Isolate malfunctions to defective interconnecting wiring	7.20	56	62	52
F174 Isolate malfunctions to avionics relay packages or relay matrixes	7.11	69	76	55
F230 Remove or install throttle quadrant switches	7.07	4	9	16
F234 Repair aircraft wiring	6.94	72	75	54
F160 Interpret aircraft interconnecting wiring diagrams	6.82	73	76	60
F173 Isolate malfunctions to asymmetry brakes	6.08	1	8	33
F221 Remove or install electrical connectors by soldering	6.06	57	62	39
R531 Isolate malfunctions to RTWS system transmission line couplers (TLC)	6.06	80	77	29
R524 Isolate malfunctions to RTWS power dividers	6.04	60	64	27
R527 Isolate malfunctions to RTWS system preamplifiers	6.03	62	66	25
P445 Isolate malfunctions to crew compartment matrix	5.97	70	71	32
R526 Isolate malfunctions to RTWS system electrical equipment racks	5.97	51	55	24
F207 Perform time compliance technical order (TCTO) modifications	5.96	73	68	50
F176 Isolate malfunctions to masterarm switches	5.95	3	8	13
F222 Remove or install electrical solderless connectors	5.93	60	61	50

TD MEAN = 5.00 SD = 1.00

knowledge only requirements, or basic supervisory responsibilities were not examined. Task knowledge and performance elements of the STS were compared against the standard set forth in AFR 8-13 (dated 1 August 1986) and AFR 8-13/ATC Supplement 1 (dated 2 March 1987), Attachment 1, paragraph A1-3c(4) (i.e., include tasks performed or knowledge required by 20 percent or more of the personnel in a skill level (criterion group) of the AFS). However, to truly assess the training needs for this diverse career ladder, the standard just mentioned was applied to 20 percent or more of the personnel within each shred.

Using this criterion, a substantial portion of the STS was found to be supported by occupational survey data. A few areas, however, were not supported. These areas dealt with General Aircraft Functions, General Avionics LRUs, Global Positioning Systems, LANTIRN Navigational and Targeting Pods, and Block 40 tasks. A few selected samples of STS paragraphs or subparagraphs that did not meet the minimum 20 percent members performing criterion are presented in Tables 15A, 15B, and 15C; a complete listing is provided in the Training Extract. Additionally, samples of STS paragraphs with questionable proficiency codes are displayed in Tables 16A, 16B, and 16C. NOTE: Data regarding LANTIRN and Block 40 tasks, which are relatively new to this career field, reflect the number of airmen performing these tasks during the collection phase of this survey (July-October 1989).

Tasks not matched to any element of the STS are listed at the end of the STS computer listing. These were reviewed to determine if there were any tasks concentrated around any particular functions or jobs; and indeed a few trends were noted. A number of tasks pertaining to head-up displays, flight instrument systems, and communication systems were easily spotlighted. Examples of technical tasks performed by 20 percent or more respondents of the STS target groups, but which were not referenced to any STS element, are shown in Tables 17A, 17B, and 17C. Training personnel and subject-matter experts should review these and other eligible unreferenced tasks to determine if inclusion in the STS is justified.

Plan of Instruction (POI)

Based on the previously mentioned assistance from the technical school subject-matter experts, inventory tasks were matched to the following POIs:

AFSC-awarding Phase II FTD course J4ABF45232A 000 (F-16 A/B),
Integrated Avionics Attack Control Systems Specialist,
dated 1 August 1989.

AFSC-awarding Phase II FTD Course J4ABF45232A 001 (F-16 C/D),
Integrated Avionics Attack Control Systems Specialist,
dated 28 April 1990.

AFSC-awarding Phase II FTD Course J4ABF45232B 000, F-16 Avionics
Systems Specialist (Instrument and Flight Control), dated
30 November 1989.

TABLE 15A

452X2A
SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Less Than 20 Percent Members Performing)

STS ITEM (With Selected Matched Tasks)	PERCENT MEMBERS PERFORMING					
	<u>'A'</u> <u>1JB</u>	<u>'A'</u> <u>1EL</u>	<u>'A'</u> <u>5LV</u>	<u>TOT</u> <u>7LV</u>	<u>'A'</u> <u>TE*</u>	<u>TOT</u> <u>ID**</u>
11a (4) (d). Moor aircraft						
S568 Moor aircraft	4	2	4	6	.95	3.08
11c (1) (b). Brakes system						
S556 Bleed or service brake systems	4	4	4	4	.50	4.58
11c (1) (c). Tires						
S600 Service aircraft tires	5	4	3	4	.65	4.05
11g (4). Prepare aircraft for fuel cell						
S586 Prepare aircraft for fuel cell	2	2	13	17	2.40	3.33

* 'A' TE Mean = 2.61 SD = 1.95 (High TE = 4.56)

** Average TD rating is 5.00 SD = 1.00

TABLE 15B

452X2B
SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Less Than 20 Percent Members Performing)

STS ITEM (With Selected Matched Tasks)	PERCENT MEMBERS PERFORMING					
	<u>'B'</u> <u>1JB</u>	<u>'B'</u> <u>1EL</u>	<u>'B'</u> <u>5LV</u>	<u>TOT</u> <u>7LV</u>	<u>'B'</u> <u>TE*</u>	<u>TOT</u> <u>ID**</u>
11c (1) (a) Landing gear systems						
S601 Service landing gear systems	1	1	2	2	.00	4.27
11c (2). Lubricate landing gear components						
S567 Lubricate landing gear components	8	8	5	5	.24	3.32
11c (3) (a). Wheel and tire assemblies						
S593 Remove or install wheel and tire assemblies	3	2	4	3	.00	4.52
11f (5). Perform engine removal preparation procedures						
S574 Perform engine removal preparation procedures	3	4	5	4	.00	4.50

* 'B' TE Mean = 2.65 SD = 2.01 (High TE = 4.66)

** Average ID rating is 5.00 SD = 1.00

TABLE 15C

452X2C

SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Less Than 20 Percent Members Performing)

STS ITEM (With Selected Matched Tasks)	PERCENT MEMBERS PERFORMING					
	<u>'C'</u> <u>1JB</u>	<u>'C'</u> <u>1EL</u>	<u>'C'</u> <u>5LV</u>	<u>TOT</u> <u>7LV</u>	<u>'C'</u> <u>TE*</u>	<u>TOT</u> <u>ID**</u>
11d (2) (b) 1. Inspect dehumidifiers						
S586 Prepare aircraft for fuel cell	1	1	4	7	.33	3.33
11e (2) (b). Inspect pneumatic system						
S557 Classify fuel leaks	2	4	8	6	1.00	3.98
11g (4). Prepare aircraft for fuel cell						
S561 Inspect aircraft dehumidifiers	0	0	2	8	.61	3.39
11g (6). Classify fuel leaks						
S563 Inspect aircraft pneumatic systems	0	1	4	10	1.39	4.01

* 'C' TE Mean = 2.99 SD = 2.08 (High TE = 5.07)

** Average TD rating is 5.00 SD = 1.00

TABLE 16A

452X2A
SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Questionable Proficiency Codes)

STS ITEM (With Selected Matched Tasks)	3LV Prof Code	PERCENT MEMBERS PERFORMING					
		'A' 1JB	'A' 1EL	'A' 5LV	TOT 7LV	'A' TE*	TOT ID**
24b (1). Pilots display unit mount	-						
J277 Boresight head up display (HUD) systems		73	77	64	28	3.90	7.78
31e. Remove up front control system (UFC) LRUs	-						
J298 Remove or install UFC LRUs		52	61	65	37	4.75	5.17
32d. Isolate malfunctions in Multi-Function Display Set (MFDS) F-16 C/D							
G241 Isolate malfunctions to MFD systems		61	68	66	37	4.70	5.58
33c. Perform operational checkout and BIT of Data Transfer Equipment (DTE)	-						
F166 Isolate malfunctions in data transfer equipment		55	63	64	33	5.50	4.50

* 'A' TE Mean = 2.61 SD = 1.95 (High TE = 4.56)

** Average TD rating is 5.00

TABLE 16B

452X2B
SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Questionable Proficiency Codes)

STS ITEM (With Selected Matched Tasks)	3LV Prof Code	PERCENT MEMBERS PERFORMING					
		'B' 1JB	'B' 1EL	'B' 5LV	TOT 7LV	'B' TE*	TOT TD**
37c. Isolate malfunctions to nozzle position indicating systems	-						
N386 Isolate malfunctions to nozzle position indicators		64	68	71	34	4.59	5.22
38a (5) Install pressure indicating systems	-						
N405 Remove or install oil pressure indicators		75	79	78	36	3.82	3.76
42g. Remove fuel quantity indicating systems LRUs	-						
N402 Remove or install fuel quantity indicating system components		90	90	84	39	4.71	4.46

* 'B' TE Mean = 2.65 SD = 2.01 (High TE = 4.66)

** Average TD rating is 5.00

TABLE 16C

452X2C
SAMPLES OF STS ELEMENTS REQUIRING REVIEW
(Questionable Proficiency Codes)

STS ITEM (With Selected Matched Tasks)	3LV Prof Code	PERCENT MEMBERS PERFORMING					
		'C' 1JB	'C' 1EL	'C' 5LV	TOT 7LV	'B' TE*	TOT TD**
53c. Perform operational checkout	-						
P464 Operationally check VHF systems		91	91	85	42	6.00	3.96
<hr/>							
54d. Isolate malfunctions to instrument landing systems	-						
Q485 Isolate malfunctions to ILS controls		79	84	81	34	5.06	4.93
<hr/>							
55g. Use test equipment	-						
Q496 Operate TACAN test sets		58	62	57	25	4.56	4.45
<hr/>							
55e. Use test equipment	-						
Q494 Operate IFF transponder test sets		90	90	83	38	6.00	4.28

* 'C' TE Mean = 2.99 SD = 2.08 (High TE = 5.07)

** Average TD rating is 5.00

TABLE 17A

452X2A
EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS	PERCENT MEMBERS PERFORMING					
	<u>'A'</u> <u>1JB</u>	<u>'A'</u> <u>1EL</u>	<u>'A'</u> <u>5LV</u>	<u>TOT</u> <u>7LV</u>	<u>'A'</u> <u>TE*</u>	<u>TOT</u> <u>TD**</u>
J289 Operationally check HUD systems	98	98	90	50	5.75	4.45
H265 Remove or install avionic power panels	80	78	71	41	5.25	3.77
J279 Interpret BIT results on cockpit television video sensors (CTVS)	29	33	37	15	2.80	4.51
J283 Isolate malfunctions to airborne video tape recorder (AVTR) system components	23	27	29	16	2.25	5.17
J284 Isolate malfunctions to CTVS	21	24	30	15	2.45	5.42
J278 Inspect HUD dehumidifiers	61	73	73	37	4.40	2.74

* 'A' TE Mean = 2.61 SD = 1.95 (High TE = 4.56)

** Average TD rating is 5.00

TABLE 17B

452X2B

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS	PERCENT MEMBERS PERFORMING					
	<u>'B'</u> <u>1JB</u>	<u>'B'</u> <u>1EL</u>	<u>'B'</u> <u>5LV</u>	<u>TOT</u> <u>7LV</u>	<u>'B'</u> <u>TE*</u>	<u>TOT</u> <u>TD**</u>
N392 Operationally check FTIT indicating systems	55	54	59	26	2.76	4.88
N393 Operationally check fuel flow indicator systems	64	63	61	28	2.59	4.82
0407 Apply range markings	90	89	81	31	3.65	3.12
0416 Isolate malfunctions to speed brake position indicators	34	34	39	15	3.24	5.09
0424 Operationally check control surface position indicating systems	38	42	43	19	2.82	5.25
0436 Remove or install miscellaneous switch panels	49	52	56	31	3.76	4.42

* 'B' TE Mean = 2.65 SD = 2.01 (High TE = 4.66)

** Average TD rating is 5.00

TABLE 17C

452X2C

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
GROUP MEMBERS AND NOT REFERENCED TO THE STS

TASKS	PERCENT MEMBERS PERFORMING					
	'C' 1JB	'C' 1EL	'C' 5LV	TOT 7LV	'C' IE*	TOT ID**
P442 Isolate malfunctions to audio 1 panels	54	65	65	30	5.11	4.89
P443 Isolate malfunctions to audio 2 panels	54	65	64	30	5.11	4.78
P459 Operationally check audio 1 panels	56	68	67	33	5.39	3.79
P466 Remove or install audio 1 panels	55	66	65	33	4.94	3.52
P468 Remove or install auxillary communication panels	60	68	66	33	4.94	3.56
Q484 Isolate malfunctions to IFF controls on auxillary communication panels	73	81	80	32	5.06	4.86

* 'C' TE Mean = 2.99 SD = 2.08 (High TE = 5.07)

** Average ID rating is 5.00

AFSC-awarding Phase II FTD Course J4ABF45232C 001, F-16 Avionics Systems Specialist (Communication, Navigation, and Penetration Aids), dated 30 November 1989.

NOTE: Phase I courses are theory and knowledge based and, thus, were not matched to performance items in the job inventory.

The results of the matching process are displayed in a computer-generated product contained in the Training Extract. Information furnished for consideration includes percent members performing data for first-job (1-24 months TAFMS) and first-enlistment (1-48 months TAFMS) personnel, as well as TE and TD ratings for individual tasks.

POI blocks, units of instruction, and criterion objectives were compared against the standard set forth in Attachment 1, ATCR 52-22, dated 17 February 1989 (30 percent or more of the criterion first-enlistment group performing tasks trained, along with sufficiently high TE and TD ratings on those tasks). Per this guidance, tasks trained in the course which do not meet these criteria should be considered for elimination from the formal course if not justified on some other acceptable basis.

A review of the tasks matched to the POIs reveals that, for the most part, the POIs are well supported by OSR data. The lone unsupported criterion objective, common to three POIs, dealt with the operation of transmission line evaluator test sets (see Tables 18, 19, and 20). Also noted were the strikingly few performance tasks matched to each POI; on the other hand, a large number of qualified tasks not referenced exist for each POI. Hence, a high degree of emphasis should be placed in reviewing these unmatched tasks to determine if new areas should be added to the courses or simply fine tune existing areas.

Based on these examples, it is evident that these courses are well supported by the various OSR data elements which reflect responses from personnel working in the career ladder. However, one should recognize the fact that this assessment is based on a limited number of course objectives reviewed against survey data. Training personnel are encouraged to review the computer printouts of each POI matched with survey data, as they create new POIs or undertake any future revisions of the present ones.

ELECTRONIC PRINCIPLES

The Electronics Fundamentals paragraph of the STS and the electronic principles taught in the basic course can be examined using data from the Electronic Principle Inventory (EPI). The EPI is a knowledge-based inventory containing 712 questions in 39 electronics-related subject areas. It identifies the range of EPs personnel must understand to perform any electronics-related job.

TABLE 18

EXAMPLES OF TASKS NOT REFERENCED TO J4ABF45232A 000 (F-16A/B) POI BLOCKS
(Less Than 30 Percent Responding)

POI REFERENCE BLOCK	UNIT	HOURS	SELECTED SAMPLE TASKS	PERCENT MEMBERS PERFORMING			
				A/B 1ST JOB	A/B 1ST ENL	'A' TE*	TOT TD**
III	1c	4:00	F186 Operate transmission line evaluator test sets (time delay reflectormeter (TDR))	0	0	4.05	6.20

* 'A' TE Mean = 2.61 SD = 1.95 (High TE = 4.56)

** Average TD rating is 5.00

TABLE 19

EXAMPLES OF TASKS NOT REFERENCED TO J4ABF45232A 001 (F-16 C/D) POI BLOCKS
(Less Than 30 Percent Responding)

<u>POI REFERENCE BLOCK</u>	<u>UNIT</u>	<u>HOURS</u>	<u>SELECTED SAMPLE TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>			
				<u>C/D</u> <u>1ST JOB</u>	<u>C/D</u> <u>1ST ENL</u>	<u>'A'</u> <u>TE*</u>	<u>TOT</u> <u>ID**</u>
III	1c	3:00	F186 Operate transmission line evaluator test sets (time delay reflectormeter (TDR))	14	22	4.05	6.20

* 'A' TE Mean = 2.61 SD = 1.95 (High TE = 4.56)

** Average ID rating is 5.00

TABLE 20

EXAMPLES OF TASKS NOT REFERENCED TO J4ABF45232B 000 POI BLOCKS
(Less Than 30 Percent Responding)

POI REFERENCE BLOCK	UNIT	HOURS	SELECTED SAMPLE TASKS	'B' 1ST JOB	PERCENT MEMBERS PERFORMING			
					'B' 1ST ENL	'B' TE*	TOT ID**	
I	4c	6:00	F186 Operate transmission line evaluator test sets (time delay reflectormeter (TDR))	8	13	3.29	6.20	

* 'B' TE Mean = 2.65 SD = 2.01 (High TE = 4.66)

** Average TD rating is 5.00

Tables 21A, 21B, and 21C list the electronic areas where 50 percent or more AFSC 451X5 airmen responded "yes" to performing these functions in their job. These data, as well as the complete EPI data package for Lowry AFB AFSCs, can be useful to subject-matter experts when evaluating those portions of the STS and POI concerning electronic fundamentals or principles.

JOB SATISFACTION ANALYSIS

An important part of analysis within any OSR involves the job satisfaction of members and how their responses compare with the responses of members of similar Air Force specialties. Table 22 presents the job satisfaction data for the AFSC 452X2A/B/C respondents, broken down into three groups (first enlistment, second enlistment, and career). A comparative sample of mission equipment maintenance personnel surveyed by the USAF Occupational Measurement Center during 1989 also appear in Table 22. These career fields included AFSCs 362X4, 411X2A, 451X4, and 454X0A/B. Reported job interest, perceived utilization of talents and training, satisfaction with sense of accomplishment gained from jobs, and expressed reenlistment intentions for AFSC 452X2A/B/C specialty jobs are presented in Table 24.

In a comparative study of experience groups of the AFSC 452X2A/B/C career ladder and mission equipment maintenance personnel surveyed by USAFOMS in 1989, data indicated that AFSC 452X2A/B/C personnel are slightly lower across most job satisfaction indicators (see Table 22). The biggest difference is in the expressed intentions of personnel to reenlist, where AFSC 452X2A/B/C first-enlistment, second-enlistment, and career groups are much more likely NOT to reenlist than the comparative sample (see Table 22).

Comparison of job satisfaction indicator responses of current survey TAFMS groups to those in the 1982 survey (see Tables 23A, 23B, and 23C) indicates that positive responses are all essentially equal to or higher than those for 1982 corresponding groups. As a whole, the percentage of survey members responding from the 1990 survey in the areas of job interest, effective use of their talents and training, and the likelihood of reenlisting is, in most areas, substantially higher than the 1982 survey groups.

The responses of members in most jobs were quite positive (see Table 24). Most indicated effective use of talents and training. Of all the jobs identified, though, DCM Complex personnel found their job the least interesting, perceive their talents are not adequately being used, and have the highest percentage of personnel (25 percent) who plan to retire. Multishop Firstline Supervisory personnel, on the other hand, perceive their job to be highly interesting and indicate the most effective use of their talents and training. A- and B-Shop personnel expressed the least likelihood to reenlist. Overall, personnel across all career ladder jobs are satisfied with their jobs, feel their talents and training are adequately utilized, and gain some sense of accomplishment from their work.

TABLE 21A

ELECTRONIC PRINCIPLES USED BY 50 PERCENT
OR MORE OF AFSC 452X2A PERSONNEL

DIRECT/ALTERNATING CURRENT
MULTIMETERS
POWER SUPPLY CIRCUITS
SOLDERING OR SOLDERLESS CONNECTIONS
TEST EQUIPMENT TYPES
TRANSMISSION/RECEPTION CIRCUITS, DEVICES, AND SYSTEMS

TABLE 21B

ELECTRONIC PRINCIPLES USED BY 50 PERCENT
OR MORE OF AFSC 452X2B PERSONNEL

DIRECT/ALTERNATING CURRENT
ELECTRO/MECHANICAL DEVICES
MULTIMETERS
POWER SUPPLY CIRCUITS
SOLDERING OR SOLDERLESS CONNECTIONS
TEST EQUIPMENT TYPES

TABLE 21C

ELECTRONIC PRINCIPLES USED BY 50 PERCENT
OR MORE OF AFSC 452X2C PERSONNEL

ANTENNAS
DIRECT/ALTERNATING CURRENT
MULTIMETERS
SOLDERING OR SOLDERLESS CONNECTIONS
TEST EQUIPMENT TYPES
TRANSMISSION/RECEPTION CIRCUITS, DEVICES, AND SYSTEMS
TRANSMITTERS AND RECEIVERS

TABLE 22

COMPARISON OF JOB SATISFACTION INDICATORS FOR 452X2A/B/C
TAFMS GROUPS IN CURRENT STUDY TO A COMPARATIVE SAMPLE
(PERCENT MEMBERS RESPONDING)*

	<u>1-48 MONTHS TAFMS</u>		<u>49-96 MONTHS TAFMS</u>		<u>97+ MONTHS TAFMS</u>	
	452X2 (N=414)	COMP SAMPLE** (N=2,658)	452X2 (N=207)	COMP SAMPLE** (N=1,930)	452X2 (N=410)	COMP SAMPLE** (N=2,575)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	82	76	75	75	76	77
SO-SO	83	15	14	16	15	14
DULL	10	3	10	8	9	8
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO EXCELLENT	81	85	79	86	79	84
LITTLE OR NOT AT ALL	19	15	21	14	21	15
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO EXCELLENT	82	88	80	84	75	82
LITTLE OR NOT AT ALL	18	12	20	16	25	18
<u>REENLISTMENT INTENTIONS:</u>						
PLAN TO REENLIST	49	61	58	72	69	75
PLAN NOT TO REENLIST	51	37	42	26	16	10
PLAN TO RETIRE	0	2	0	1	15	14

* Columns may not add to 100 percent due to nonresponse or rounding

** Comparative sample of Mission Equipment Maintenance career ladders in 1989
(Includes AFSCs 362X4, 411X2A, and 451X4)

TABLE 23A

COMPARISON OF 452X2A JOB SATISFACTION INDICATORS
FOR CURRENT AND PREVIOUS SURVEY
(Percent Members Responding)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	1990	1982	1990	1982	1990	1982
	452X2A	326X6C	452X2A	326X6X	452X2A	326X6X
	(N=111)	(N=51)	(N=49)	(N=94)	(N=52)	(N=153)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	78	63	76	63	81	63
SO-SO	10	25	10	19	10	20
DULL	12	10	14	17	10	17
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO EXCELLENT	75	55	79	56	85	69
LITTLE OR NOT AT ALL	24	43	20	44	15	30
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO EXCELLENT	80	65	77	67	85	61
LITTLE OR NOT AT ALL	20	31	22	32	15	38
<u>REENLISTMENT INTENTIONS:</u>						
PLAN TO REENLIST	47	35	51	43	69	69
PLAN NOT TO REENLIST	53	63	49	56	23	18
PLAN TO RETIRE	0	0	0	1	8	13

NOTE: Columns may not add to 100 percent due to nonresponse and rounding

TABLE 23B

COMPARISON OF 452X2B JOB SATISFACTION INDICATORS
FOR CURRENT AND PREVIOUS SURVEY
(Percent Members Responding)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	1990	1982	1990	1982	1990	1982
	452X2B (N=136)	326X7C (N=26)	452X2B (N=57)	326X7X (N=102)	452X2B (N=42)	326X7X (N=123)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	84	66	79	69	88	72
SO-SO	7	19	16	14	2	12
DULL	9	15	4	17	10	15
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO EXCELLENT	85	73	82	72	81	77
LITTLE OR NOT AT ALL	15	27	18	28	19	22
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO EXCELLENT	85	69	84	80	76	72
LITTLE OR NOT AT ALL	15	31	16	19	24	27
<u>REENLISTMENT INTENTIONS:</u>						
PLAN TO REENLIST	48	46	56	55	81	63
PLAN NOT TO REENLIST	51	50	44	45	14	19
PLAN TO RETIRE	1	0	0	0	5	19

NOTE: Columns may not add to 100 percent due to nonresponse and rounding

TABLE 23C

COMPARISON OF 452X2C JOB SATISFACTION INDICATORS
FOR CURRENT AND PREVIOUS SURVEY
(Percent Members Responding)

	<u>1-48 MOS TAFMS</u>		<u>49-96 MOS TAFMS</u>		<u>97+ MOS TAFMS</u>	
	1990	1982	1990	1982	1990	1982
	452X2C	326X8C	452X2C	326X8X	452X2C	326X8X
	(N=164)	(N=70)	(N=55)	(N=98)	(N=43)	(N=139)
<u>EXPRESSED JOB INTEREST:</u>						
INTERESTING	83	61	73	55	72	68
SO-SO	8	13	13	18	23	17
DULL	9	26	15	27	5	15
<u>PERCEIVED USE OF TALENTS:</u>						
FAIRLY WELL TO EXCELLENT	81	53	75	60	81	63
LITTLE OR NOT AT ALL	19	47	25	40	19	37
<u>PERCEIVED USE OF TRAINING:</u>						
FAIRLY WELL TO EXCELLENT	84	73	76	64	86	63
LITTLE OR NOT AT ALL	16	27	24	35	14	37
<u>REENLISTMENT INTENTIONS:</u>						
PLAN TO REENLIST	50	39	56	50	67	61
PLAN NOT TO REENLIST	50	60	42	48	28	19
PLAN TO RETIRE	0	0	0	0	5	19

NOTE: Columns may not add to 100 percent due to nonresponse and rounding

TABLE 24

COMPARISON OF JOB SATISFACTION INDICATORS FOR MEMBERS OF 452X2 SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)*

	DE- POT (N=10)	'A' CLS (N=201)	'B' CLS (N=208)	'C' CLS (N=267)	MS CLS (N=164)	DCM CLS (N=151)	TTC CLS (N=15)
<u>EXPRESSED JOB INTEREST:</u>							
INTERESTING	90	78	84	78	85	66	67
<u>PERCEIVED USE OF TALENTS:</u>							
FAIRLY WELL TO EXCELLENT LITTLE OR NOT AT ALL	70 30	79 21	85 16	80 20	85 15	71 28	67 33
<u>PERCEIVED USE OF TRAINING:</u>							
FAIRLY WELL TO EXCELLENT LITTLE TO NOT AT ALL	70 30	81 19	84 16	84 16	87 13	56 44	80 20
<u>SENSE OF ACCOMPLISHMENT GAINED FROM WORK:</u>							
SATISFIED NEUTRAL DISSATISFIED	70 10 20	71 10 19	78 9 13	73 13 13	77 7 16	62 14 25	60 13 27
<u>REENLISTMENT INTENTIONS:</u>							
PLAN TO REENLIST PLAN NOT TO REENLIST PLAN TO RETIRE	90 10 0	54 43 2	54 45 1	56 42 2	71 24 5	56 20 25	87 13 0

* Columns may not add to 100 percent due to nonresponse or rounding

IMPLICATIONS

This survey was requested by training personnel to obtain task and equipment data for their use in evaluation of current training programs.

The findings of this survey suggest that the F-16 Avionic Systems specialty is a uniquely diverse and highly technical career ladder. Survey respondents, for the most part, were organized in accordance to which avionic system they maintain. One group, however, integrated the maintenance abilities of personnel who perform tasks associated with every avionic system on the F-16 aircraft, thus meeting the Rivet Workforce objectives of minimizing an aircraft maintenance on several system specialties.

A narrative depicting the normal progressive supervisory responsibility for this career ladder is noticeably missing from the AFR 39-1 job descriptions. With this exception, though, the present classification structure, as described by AFR 39-1 Specialty Descriptions, accurately portrays the jobs in this study. No serious job satisfaction problems appear to exist within this specialty; however, the job satisfaction responses for 452X2 personnel were slightly lower than those of a comparative sample of Air Force personnel in 1989.

These findings could greatly enhance training decisions, particularly in the future consolidation efforts of the Phase II FTD courses with current Phase I fundamental courses. In this regard, even though analysis of career ladder documents indicate that a major portion of the STS was supported by occupational survey data, proficiency codes for this STS should be reviewed with upmost care. Likewise, the POIs, with alarmingly few performance tasks noted, were also supported by the findings of this survey. The STS, POIs, and especially tasks not referenced, require, as a minimum, an overhauling review by training personnel, subject-matter experts, and career ladder functional managers. Eye-catching information has surfaced to warrant much more than just cosmetic adjustments to this specialty's training program.

The findings of this OSR come directly from survey data collected from F-16 Avionic Systems personnel worldwide. These data are readily available to training and utilization personnel, functional managers, and any other interested parties having a need for such information. Much of the data are compiled into extracts which are excellent tools in the decision-making process. These data extracts should be used when a training or utilization decision is made.

APPENDIX A

SELECTED REPRESENTATIVE TASKS PERFORMED BY
MEMBERS OF CAREER LADDER JOBS

TABLE I
DEPOT JOB (STG124)

GROUP SIZE: 10
PERCENT OF SAMPLE: 1%

AVERAGE TICF: 84 MONTHS
AVERAGE TAFMS: 98 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
F158 Inspect aircraft wiring	100
F208 Plug or cap electrical or air lines	100
F215 Remove or install cannon-plug connectors	100
F217 Remove or install coaxial cables	100
P471 Remove or install UHF system LRUs	100
P472 Remove or install VHF system LRUs	100
H266 Remove or install fire control navigation panels (FCNP)	100
H267 Remove or install INS LRUs	100
F160 Interpret aircraft interconnecting wiring diagrams	90
F234 Repair aircraft wiring	90
G258 Remove or install FCR system LRUs	90
F207 Perform time compliance technical order (TCTO) modifications	80
F214 Remove or install avionic systems relay packages or relay or relay matrixes	80
K341 Remove or install flight control system LRUs	80
Q508 Remove or install localizer glide slope antennas	80
Q510 Remove or install TACAN system LRUs	70
R545 Remove or install interference blankers	60
M374 Remove or install standby attitude indicators	60
L363 Remove or install airborne signal data recording system LRUs	50
O432 Remove or install control surface position indicators	50
B47 Supervise F-16 Avionic Attack Control Systems Specialists (AFSC 45252A)	40
F212 Remove or install asymmetry brakes	40
S606 Walk wings or tails during aircraft towing operations	30
C60 Evaluate individuals for promotion, demotion, or reclassification	20
A16 Plan work assignments	20

TABLE II
A-SHOP CLUSTER (STG65)

GROUP SIZE: 201
PERCENT OF SAMPLE: 19%

AVERAGE TICF: 45 MONTHS
AVERAGE TAFMS: 63 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
G236 Interpret BIT results on fire control radar (FCR) systems	100
G239 Isolate malfunctions to FCR system LRU	99
J289 Operationally check AVTR systems	99
G258 Remove or install FCR system LRUs	98
G251 Perform BIT on FCR systems	98
J285 Isolate malfunctions to HUD pilot display units (PDU)	98
H264 Operationally check INS	97
F181 Operate head up display (HUD) systems for tie-in troubleshooting	94
G240 Isolate malfunctions to FCR wave-guide assemblies	93
F178 Load and verify canopy coefficients	92
I276 Visually inspect FCC or EFCC mounts	91
F171 Isolate malfunctions in throttle grip assemblies	89
J292 Perform BIT on HUD systems, other than CTVS	88
J294 Perform HUD system integration checks	84
F229 Remove or install throttle grip assemblies	84
F233 Remove or install wave-guides	79
S573 Perform aircraft safe for maintenance checks	74
J281 Interpret BIT results on UFCs	68
H262 Boresight inertial navigational unit (INU) mounts	66
G253 Perform BIT on REO systems	57
F205 Perform safety wiring	45
F221 Remove or install electrical connectors by soldering	36
J284 Isolate malfunctions to cockpit television video sensors (CTVS)	24

TABLE III
B-SHOP CLUSTER (GRP167)

GROUP SIZE: 208
PERCENT OF SAMPLE: 20%

AVERAGE TICF: 36 MONTHS
AVERAGE TAFMS: 54 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
K341 Remove or install flight control system LRUs	99
K327 Operationally check flight control power supplies	99
K328 Operationally check flight control systems	98
K338 Perform flightline test set checks with hydraulics	96
O421 Operationally check AOA indexers	96
O430 Remove or install AOA indicators	96
N402 Remove or install fuel quantity indicating system components	94
O410 Isolate malfunctions to AOA indicators	94
F158 Inspect aircraft wiring	93
O407 Apply range markings	91
L352 Isolate malfunctions to VVIs	89
N379 Isolate malfunctions to fuel flow indicators	87
F227 Remove or install instrument glare shields	81
L350 Isolate malfunctions to pitot-static system tubing	79
N395 Operationally check fuel quantity probes	76
F188 Operationally check asymmetry brakes	67
S597 Service aircraft hydraulic systems	63
F211 Remove or install ADIs	61
L361 Purge pitot-static systems	55
F212 Remove or install asymmetry brakes	52
M370 Operationally check magnetic standby compasses	52
M371 Operationally check pilots clock	43
F193 Operationally check HSIs	35

TABLE IV
C-SHOP CLUSTER (STG68)

GROUP SIZE: 267
PERCENT OF SAMPLE: 26%

AVERAGE TICF: 41 MONTHS
AVERAGE TAFMS: 63 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
P471 Remove or install UHF system LRUs	99
P463 Operationally check UHF systems	98
F200 Operationally check UHF/VHF switches	98
Q506 Remove or install IFF system LRUs	98
R536 Operationally check RTWS systems	97
R546 Remove or install RTWS system LRUs	97
R528 Isolate malfunctions to RTWS system receiver controllers	97
Q514 Set IFF mode 4 codes	94
Q497 Operationally check air-to-ground IFF systems	94
R529 Isolate malfunctions to RTWS system receivers	92
Q510 Remove or install TACAN system LRUs	92
Q478 Isolate malfunctions to air-to-air IFF electrical synchronizers or reply evaluators	90
R521 Isolate malfunctions to interference blankers	90
P469 Remove or install intercommunication system LRUs	89
Q495 Operate ILS test sets	88
Q475 Interpret BIT results on TACAN systems	85
P446 Isolate malfunctions to engine warning control units (EWCU) (Bitching Betty)	85
F217 Remove or install coaxial cables	81
Q487 Isolate malfunctions to marker beacon antennas	79
F187 Operationally check ADIs	78
P442 Isolate malfunctions to audio 1 panels	72
Q509 Remove or install marker beacon antennas	69
F194 Operationally check IMSCs	66
Q513 Set IFF mode 3/A codes	64
P441 Insert codes into secure voice units	57
F235 Reset fault indicator latches	45
R539 Program ECM PODs	44

TABLE V

MULTISHOP FIRSTLINE SUPERVISORY CLUSTER (STG119)

GROUP SIZE: 164
 PERCENT OF SAMPLE: 16%

AVERAGE TICF: 72 MONTHS
 AVERAGE TAFMS: 117 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

TASKS	PERCENT MEMBERS PERFORMING
F211 Remove or install ADIs	98
H267 Remove or install INS LRUs	98
L362 Remove or install air data system LRUs	97
I272 Operationally check FCC or EFCC systems	96
L360 Perform leak checks of pitot-static systems	95
M374 Remove or install standby attitude indicators	95
J296 Remove or install HUD system LRUs	93
O421 Operationally check AOA indexers	91
F178 Load and verify canopy coefficients	89
J294 Perform HUD system integration checks	88
F171 Isolate malfunctions in throttle grip assemblies	86
Q503 Perform BIT on TACAN systems	81
O407 Apply range markings	78
G241 Isolate malfunctions to MFD systems	74
P466 Remove or install audio 1 panels	71
B30 Direct maintenance or checkout of integrated avionic systems	69
D90 Conduct OJT	68
B45 Supervise Apprentice F-16 Avionic Instrument and Flight Control Systems Specialists (AFSC 45232B)	67
B49 Supervise F-16 Avionic Instruments and Flight Control Systems Specialists (AFSC 45252B)	65
B47 Supervise F-16 Avionic Attack Control Systems Specialists (AFSC 45252A)	63
B43 Supervise Apprentice F-16 Avionic Attack Control Systems Specialists (AFSC 45232A)	60
B48 Supervise F-16 Avionic Communication, Navigation, and Penetration Aids Specialists (AFSC 45252C)	56
B44 Supervise Apprentice F-16 Avionic Communication, Navigation, and Penetration Aids Specialists (AFSC 45232C)	49
A16 Plan work assignments	46
B39 Interpret policies, directives, or procedures for subordinates	44
B38 Initiate punitive actions or recognition for commendable performances	38
B50 Supervise F-16 Avionic Systems Technicians (AFSC 45272)	37

TABLE VI
DCM COMPLEX CLUSTER (STG08)

GROUP SIZE: 151
PERCENT OF SAMPLE: 14%

AVERAGE TICF: 80 MONTHS
AVERAGE TAFMS: 163 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
B27 Counsel personnel	72
E128 Make entries on AF Forms 623 (On-The-Job Training Record)	69
A4 Determine work priorities	62
C82 Write APRs	62
B39 Interpret policies, directives, or procedures for subordinates	55
B36 Indoctrinate newly assigned personnel	54
B51 Supervise military personnel in AFSCs other than 452X2	50
C58 Evaluate compliance with performance standards	47
A3 Determine requirements for personnel, space, equipment, or supplies	45
A6 Develop work methods or procedures	44
A16 Plan work assignments	42
A9 Establish performance standards	39
C73 Indorse airman performance reports (APR)	38
B25 Conduct follow-up actions on supply or work requests	36
B42 Present briefings	36
E109 Design local worksheets, forms, or checklists	35
C54 Analyze workload requirements	34
C61 Evaluate inspection reports or procedures	33
C72 Evaluate work schedules	31
D90 Conduct OJT	30
C77 Perform safety inspections	28
C63 Evaluate local directives or operating procedures	28
C60 Evaluate individuals for promotion, demotion, or reclassification	26
C69 Evaluate suggestions	24
A21 Schedule inspections	23

TABLE VII

TTC INSTRUCTOR JOB CLUSTER (STG50)

GROUP SIZE: 15
 PERCENT OF SAMPLE: 1%

AVERAGE TICF: 88 MONTHS
 AVERAGE TAFMS: 102 MONTHS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
D97 Evaluate progress of students	100
D86 Administer or score tests	100
D101 Prepare lesson plans	100
D88 Conduct formal classroom instruction	93
D93 Develop training aids	87
D108 Write test questions	80
B27 Counsel personnel	67
D99 Maintain training records, charts, or graphs	60
D92 Develop course curricula, plans of instruction (POI), or specialty training standards (STS)	60
E156 Update TO files	47
E128 Make entries on AF Forms 623 (On-The-Job Training Record)	47
A4 Determine work priorities	40
D102 Procure training aids, space, or equipment	33
B38 Initiate punitive actions or recognition for commendable performance	33
D98 Evaluate training methods, techniques, or materials	33
D105 Select individuals for specialized training	27
D95 Establish study reference files	20
D104 Schedule training sessions other than QJT	20
D103 Review training reports	20
B40 Inventory equipment, tools, or supplies	20